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THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.

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The diagnosis is of primary importance in all diseases.

The early recognition of pulmonary tuberculosis is doubly important because the disease may be arrested in the incipient stage by the application of proper hygienic measures. If not recognized until the disease is advanced, restoration to health is less likely to occur under the best management.

It is probably just to say that pulmonary tuberculosis is not recognized in the early stage in the majority of people who suffer from the disease. The non-recognition of the disease in the early stage is chiefly due to two factors: First, the patient often ignores the slight, dry, hacking cough, the lassitude, the lessened endurance, the nervous tire, the poor appetite, etc., which may indicate the beginning of the disease; and, second, the failure of the physician to examine the patient thoroughly by all the means and measures which experience and modern scientific methods afford.

It is true that occasionally the disease is recognized in its incipiency with difficulty, but in the great majority of patients care and thoroughness in examination will reveal it. In the doubtful case the physician who recognizes his responsibility will apply every resource at his command, and by repeated examinations finally reach the truth. It will be no reproach to him if he is unable to discover the disease in certain instances, but he will be to blame, if, not satisfied in his own mind, he does not in all doubtful cases seek the aid of a brother physician whose experience and skill may help him to make a diagnosis.

To make a diagnosis of tuberculosis when the disease is not present is embarrassing to the physician, but this error cannot result as disastrously to the patient as the failure to recognize the disease when it is present.

The Methods of Diagnosis of Pulmonary Tuberculosis.—I shall not attempt to go too much into details in attempting to write the methods of making a diagnosis in tuberculosis. Should I do so, it would make this article too long, and possibly confuse those whom it is intended to instruct.

The plan which will be pursued in an attempt to make plain the methods of procedure in the examination of the patient will be to follow a systematic scheme. This will make the discussion of the subject easier, and although it may not always be necessary for the physician to follow the scheme as given, still it must be admitted that an orderly, systematic plan will usually be of aid to the physician, and will obviate the chance of the omission of some important means of arriving at a diagnosis.

Usually it will be best to, first, obtain a history of the patient's life. This may be obtained usually without great loss of time by allowing the patient to tell his own story, guided perhaps by judicious leading questions. In tuberculosis it is well to know the *Social History;* the age, the civil state, the occupation, the home surroundings, including the sanitary conditions, the habits as to the use of alcohol, tobacco, the character of food, the hours of work and of sleep. Second, the *Family History;* which should include the age and causes of death of deceased relatives, especially grandparents, parents, brothers and sisters, and the state of health of living near relatives. Third, the history of *Previous Diseases* from which the patient has suffered, and the state of health thereafter. Fourth, the patient should also tell of the disease for which he seeks consultation, and especially as to its mode of onset, with the symptoms as noted by the patient or the friends up to the time of examination.

From the social condition of the patient one may learn if the occupation is one which obliges him to remain much within doors, especially if the place of work is unwholesome from insufficient air space, want of sunlight, or if the air is contaminated with smoke, dust, chemical fumes, etc., which irritate the mucous membrane of the air passages. Tuberculosis occurs most frequently in young adult life. The negro is especially liable to the disease.

In reference to the home life of the individual, it is important to learn if the sleeping rooms especially are light and the ventilation good. An over-indulgence in tobacco, especially smoking, may excite a catarrh of the air passages, a condition which may render an individual more susceptible to tubercular infection. The constant use of alcohol predisposes one to the disease.

From the history one may learn that tuberculosis has been prevalent in the family. This does not mean that the germ has been inherited, but it is probably true that a type of tissue may be inherited which furnishes a soil on which the germ of tuberculosis may more readily grow than in another individual whose family type of tissue is more resistant. It is most important to know if tuberculosis exists or has existed in the family, or in the same residence with the individual, inasmuch as it has been proved that direct contagion may occur by means of the tubercle bacilli in the dust-laden air of a dwelling, or by means of the hands, household utensils, etc., contaminated by touching articles of furniture, door knobs, etc., in houses in which a tubercular individual lives or has lived.

In obtaining a history of the previous disease, it is well to note the occurrence of attacks of pleurisy, of measles, whooping-cough, la grippe, pneumonia, bronchitis, or any other infection which is associated with catarrh of the respiratory passages. The existence of enlargement of the glands of the neck, scrofula so-called, in children of the family is important.

The history of the present disease may elicit the mode of onset of pulmonary tuberculosis which is most usually by an attack of bronchitis in one who has been previously in a good state of health. This attack is often called "a cold," or it may be a part of influenza, of measles, or of whooping cough. It differs from these diseases, however, from the fact that the patient does not become entirely well, and usually the cough persists with or without the expectoration of mucus or mucus and pus. Slight elevation of temperature usually exists, which is not recognized by the patient, excepting that perhaps he notices the appetite is not as good, he has a sense of weariness, less inclination to work, less endurance, and the sleep is not restful and is sometimes disturbed by night sweats. The patient gradually becomes worse, and an examination by the physician reveals the presence of tuberculosis, localized usually in the top of one lung.

The onset may be by an attack of pleurisy, from which the patient recovers, but with a cough which persists, or there may be several attacks of pleurisy, with intervals of varying lengths of time, from a month to one or more years.

Third, the first indication to the patient may be a hemorrhage, usually of moderate severity, which is terrifying to him, and takes him to the physician at once. Fourth, it may come on suddenly, as a pneumonia, usually of the catarrhal type, which is attended with a good deal of fever, much cough and a profuse expectoration, and marked disturbance of the general health. These symptoms may ameliorate in time, but the cough persists, with more or less fever, rapid pulse, night sweats, and a profuse expectoration, and the disease usually is well established. Or, fifth, it may occur as a latent process, marked by neurasthenic symptoms only, or by disturbance of the digestive organs, with or without cough, for which the patient seeks the advice of the physician. A persistently rapid pulse occurring in any of the modes of onset is notably suspicious of tuberculosis.

The history of chronic tuberculosis of the lungs, after it has been established, with an onset coming on in one or the other manner described above, is valuable. Usually its

course is progressive, although there may be intervals of amelioration with, however, a general progressiveness towards a worse condition. This is evinced by a gradually increasing emaciation, by a persistent cough, with the expectoration of moderate or even large amounts of mucus or muco-pus, with or without blood; at times marked hemorrhage; a remittent or intermittent type of fever, marked by a hectic condition, with night sweats, impairment of digestion, with a tendency to constipation or frequently a profuse diarrhea.

A few cases doubtless after presenting the symptoms of one or the other modes of onset become well after an indefinite period, the lesion in the lung healing by cicatrization. Doubtless this process of cure is not always complete, and under certain conditions an unhealed focus may be at a later period, the source of a new infection of the lung tissue, with the development of the symptoms as enumerated above.

The examination of the patient. The life history of the patient will often be of considerable aid to the physician in making his examination. In some instances it will throw no light whatever upon the illness from which the patient suffers. Nevertheless, it will be of value even if it be a negative quality.

Inspection. The examination of the patient should be done in a room sufficiently light to permit of a thorough examination by inspection. The room should be sufficiently warm to permit the removal of the clothing of the patient from the upper half of the body. With young girls and women it may not be wise to remove the entire clothing from the chest, because of the natural embarrassment which a delicate patient will feel. The physician will always have a due regard for the feelings of his patient, and yet he should insist upon removal of the clothing to a degree which will enable him to make the proper examination. In inspection of the patient due attention should be paid to the general nutrition, as evinced by the fullness of the body, and especially of the subcutaneous fat and muscle bulk. The color of the patient is not always indicative of the condition of the blood. Floridness may be associated with anemia, and pallor may be coincident with normal blood. The color of the skin, however, is important, as well as its texture. People who are apparently predisposed to tuberculosis may present a rough and pimply skin, with the tendency to a greasiness, which gives a characteristic appearance, but it is not necessarily indicative of tuberculosis. On the other hand, many people who suffer from tuberculosis present a fair skin which is clear and transparent, and cosmetically speaking, beautiful. It has been said that people with light or red hair and a blond complexion are susceptible to tuberculosis. The bright clear eyes of the patient with tuberculosis is notable.

Inspection may show the so-called "phthisical" chest. This chest is long, narrow, almost round, with very oblique lower ribs and narrow intercostal spaces. The scapulae stand far apart and are prominent, giving a stooped shoulder appearance. The subclavian regions are often flat. The scapular muscles of the side of the affected lung may be atrophied out of proportion to the other chest muscles. The respiratory movements in such a chest are restricted.

Inspection, on the other hand, may show no abnormality in the nourishment of the patient, and may show a normal chest in its round fullness and unrestricted movements, or the inspection may show a physical condition of any intermediate degree between the extreme "phthisical" and the so-called normal chest.

With the presence of the "phthisical" chest, one becomes impressed with the probability of the presence of tuberculosis, and it is an aid in arriving at knowledge of the truth, but on the other hand, the absence of the phthisical chest is not to be taken as a negative evidence of the presence of tuberculosis.

The inspection should include an examination of the pharynx and of the larynx. The pharynx in tuberculosis often shows evidences of catarrh of the mucous membrane and not infrequently enlargement of the

faucial tonsils, especially in the young adult and in children.

Inspection of the larynx will frequently show, in incipient tuberculosis of the lung, a pallor of the mucous membrane which, while not pathognomonic, is to be considered as significant.

Palpation. Palpation will verify the evidence obtained by inspection; will emphasize the form and contour of the chest, and the lack of symmetry of motion in the two sides of the chest, as well as to indicate the changes in the normal voice fremitus. Palpation will verify the existence of abnormal depressions in the chest wall, and a want of local expansion. It will also indicate the points of tenderness over a possible localized pleuritis.

Mensuration. Mensuration tells us the size and degree of expansion of the chest. It will confirm the evidences obtained by inspection and palpation of the shape and movements of the two sides of the chest. The circumferential measure should be taken at the level of the nipple with an ordinary tape line or with a tape so fastened with a hinge as to fit in the central grove of the back and indicate by one measurement the entire circumference and the measure of each half of the chest at the same time. It must be remembered that the right chest in right-handed individuals is usually from one-half to one inch larger than the left. The circumferential measurement will indicate the so-called respiratory capacity. The measurement should be taken of the chest while at ordinary rest and at the height of inspiration. The difference between the measurements of extreme inspiration and the chest at rest indicates roughly the lung capacity, and also something of the degree of strength of the respiratory muscles.

In examining 1,000 males, between the ages of 16 and 40, Dr. E. O. Otis found that the average measure of the chest in repose was 34 inches, and at the end of full inspiration 36 1/10 inches, giving a respiratory capacity of 2 1/10 inches. Examining 750 students of Wellesley, Miss Wood found the measurement of the chest to be 24 6/10 inches, and at full inspiration 27 2/10 inches, a respiratory capacity of 2 6/10 inches. If the respiratory capacity by mensuration is found to be less than two inches, it indicates either a lack of strength of the respiratory muscles or a lessened lung capacity due to a consolidation or compression of the lung, and therefore the possibility of the beginning of incipient tuberculosis.

Spirometry. Spirometry is a means of measurement of the quantity of air taken in with each inspiration, and discharged with each expiration. It affords valuable information similar to that of mensuration. A spirometer is not expensive and it may be utilized with ease by the general practitioner. Details of its use cannot be given here. Suffice it to say that the capacity of the lungs, as measured in many individuals, has been found to be from 230 to 240 cubic inches. The lung capacity has a relation to the height of the individual. This has been estimated by E. O. Otis of Boston, to be 3.52 cubic inches of lung capacity for each inch of height of the individual. Thus an individual measuring 72 inches in height should have a lung capacity of about 250 cubic inches.

Percussion. Percussion is an important method of examination in early tuberculosis. The local infiltration of the lung may be so small, and the amount of air in the lung may be so little altered in quantity, that there may be no perceptible change in the percussion note over corresponding portions of the two sides of the chest. One should also bear in mind the fact that the clavicular regions of the right side usually give a percussion note which is relatively duller and of higher pitch than the corresponding regions of the left side. In incipient cases percussion should be made carefully over the top of each lung, behind as well as in front. The method of percussion may be direct with the fingers alone, or with the finger of the other hand as the pleximeter, or one may use the instruments, hammer and pleximeter, ordinarily used in percussion. Personally, I prefer the unaided hands. It will be found that if one uses a very light percussion over the chest in

front, and especially just above and just below the clavicles, slight differences of dullness between the two sides are more readily brought out than by a percussion which is too forcible or too deep. Behind, I have found it of advantage to percuss from the spine of the scapula as a center. That is to percuss upward from this point until the upper line of the apex of the lung is reached on both sides. The height to which the lung rises in the neck is variable and the left apex usually rises slightly higher than that of the right. The relative dullness obtained by percussing over the apices of the lungs from behind gives, in many instances, the first percussion sign of infiltration. Tuberculosis may begin at the apex of the lower lobe and spread from that point along the interlobular fissure, upward into the apex and downward into the lower lobe. At its very beginning relative dullness may therefore be found just at the root of the spine of the scapula. In percussing in that region it is well to have the patient sit with the body bent somewhat forward with the scapulae separated, by placing the hands on opposite shoulders.

As the disease progresses, percussion will readily evince dullness over areas of infiltration and consolidation of the lung which are unmistakable. In the beginning of the disease percussion can show relative dullness only, and consequently is a means of diagnosis which can be appreciated only by those who practice it constantly.

Auscultation. Auscultation gives one the most information of all of the physical means of exploration in tuberculosis of the lung. By this means one may by care detect the early slight roughening of the vesicular inspiratory note, the slight prolongation of the expiratory, and the moist rale which indicates the early catarrh of infiltration. As the moisture in the smaller tubes varies in amount, the crepitant or subcrepitant rales which may be heard at the end of inspiration in the incipient case may disappear from time to time. The examination should be repeated, that one may be sure of the presence of this important sign. Cough, followed by a deep inspiration, will not infrequently elicit the moist small rale at the end of inspiration, when it cannot otherwise be heard.

As the case advances, the rough vesicular respiration becomes broncho-vesicular, and then bronchial, with the presence of many moist rales, and as the lung breaks down and cavity formations occur, the bronchial sounds, amphoric and cavernous breathing, broncophony, with mucous gurgles, bronchial rales of all kinds are plainly evidenced.

If one will carefully examine the patient by all of these measures, the earliest case of tuberculosis will usually reveal itself. In those cases in which none of these measures will elicit an abnormal sign, repeated examinations should be made.

In tuberculosis as soon as expectoration occurs, we have a means of its recognition which is of the greatest value; that is, examination of the sputa. The sputa of tubercular patient in its early stage is not characteristic in appearance. It may be almost pure glycerine-like mucus tinged at times with the darkish particles of dirt on inspired air, or by the slight yellowish tinge of more or less pus. From this it may present all of the characteristics of the expectoration with broken-down lung tissue, with sometimes a pint to a quart a day of large nummular masses, yellowish or yellow-green in color, sometimes streaked and mixed with blood. As the macroscopic appearance of the sputa is never absolutely characteristic of tuberculosis, the diagnosis should not be based upon it, but a microscopic examination should be made for the tubercle bacillus.

For this purpose the sputa should be collected in a clean bottle or other vessel, so preserved that it may not contain extraneous material. The mouth of the patient should if possible, be cleansed before the collection is attempted. A small amount of a portion of the sputa which is yellowish in color should be spread in a thin layer on a well-cleaned cover-glass by means of needles or by pressing a small particle of the material between two of the cover-glasses. Square cover-glasses are more easily handled than round ones. Care should be taken to spread the sputa very thinly and in a uniform

layer. Those who have not had much experience in examining the sputa are apt to spread it too thick on the cover-glass. The cover-glass should be allowed to dry in the air, or it may be held at a considerable distance above a Bunsen burner or alcohol lamp and allowed to dry, after which the preparation held with forceps, should be passed three or four times quickly through the flame to fix it. The smear, with the sputa side up, should then be held in a forceps and covered with the staining solution, care being taken to prevent the fluid from running to the under surface of the slip. It should then be held just above the lamp flame until the solution boils for one or two seconds, as shown by the presence of bubbles in the fluid. The excess of stain should be washed off in water and the cover-slip dipped into the decolorizing solution until the color is almost wholly removed. Alternate washing in water and the decolorizer until practically no more color is seen will leave the bacillus of tuberculosis stained. Instead of pouring the stain upon the cover-glass held in a forceps, one may float the cover-slip, sputum side down, on the staining fluid contained in a watch glass. The watch glass may then be held over a flame and heated until bubbles arise in the fluid, after which the cover-glass may be destained as before.

If fuchsin has been used as a stain for the tubercle bacillus, it is well, especially for those who are not accustomed to the work, and also of use in cases where the tubercle bacillus is not plentiful, to use a counterstain of methylene blue. After decolorizing the cover slip the solution of methylene blue, should be poured upon the preparation as before described, or the cover-slip floated upon the blue staining fluid in a watch glass for from one to five minutes, without heat, and then washed in water. The cover-slip so prepared may then be mounted in water, if the preparation is not to be preserved, or it may be dried between two blotting pads and thoroughly dried by holding it at a considerable distance over a flame, and then mounted in balsam or any other one of the permanent mounting media. When so treated, the tubercle bacillus will be stained red, and all other objects blue. To examine a slide so stained it will be most practical to use a microscope with a 1/12 inch oil immersion lens, and an Abbe condenser, but if one does not possess an instrument with these accessories, a dry lens of 1/7 or 1/8 of an inch may suffice.

A stain for tubercle bacilli which is practical, and which has long been in use and proved its value, is the so-called Ziehl-Nielson stain. This consists of

Fuchsin, 1 part.
Carbolic acid (crystals,) 5 parts.
Alcohol, 10 parts.
Distilled water, 100 parts.

The fuchsin should be dissolved as nearly as possible in the alcohol, the distilled water, containing the carbolic acid, being slowly added and shaken. This solution will keep indefinitely, and may be used by the method described above.

To decolorize, use a mixture of 3% of hydrochloric acid in 95% alcohol. To decolorize, hold the stained cover-slip in the decolorizing solution until most of the red color is removed; then wash in water; and repeat the immersion in the decolorizing solution, and wash in water until but very little of the red stain can be seen upon a final washing in water.

A counter-stain of a 1% solution of methylene blue may be used after decolorizing the fuchsin stain, as described above, when the preparation will be ready to mount in water, or, after drying, in balsam, or other medium.

One may, in doubtful cases, spread the sputa over the microscope slide, fix it as is usual with cover-slips, and stain. Decolorize in the same method. A large cover-glass may then be placed on the slide, and the microscopic examination be made. This affords the advantage of a relatively large amount of sputa prepared in a short space of time, and enables one to more readily detect the bacillus in those cases where the germs may not be numerous.

In the early stage of tuberculosis the bacillus may be found with considerable difficulty in the sputa. The failure to find it should not be taken as an evidence of its ab-

ence, but repeated examinations of different specimens of the sputa should be made for days, and even weeks, before coming to a decision. When once found, the tubercle bacillus is an absolutely sure and pathognomonic sign of the presence of the disease.

The examination of the sputa is important in every case of tuberculosis of the respiratory tract. In cases which, upon physical examination, show classical evidences of tuberculosis, the sputa should be examined for the bacillus for complete confirmation of the evidence of physical examination.

In those cases in which the physical examination gives uncertain evidence, examination of the sputa is most important. The physician who does not make examinations of the sputa, or who does not have the examinations made by someone competent to do it, is not fulfilling his duty to the patient and the community.

The smegma bacillus and the bacillus of leprosy have the same staining reaction as the tubercle bacillus. The latter is hardly to be mistaken for the tubercle bacillus. The smegma bacillus may contaminate any of the substances which are ordinarily examined for the presence of the tubercle bacillus. The tubercle bacillus will stand the decolorizing fluid made up of absolute alcohol 2 parts, to nitric or hydrochloric acid, one part, while the smegma bacillus is entirely destained by it. In cases in which there is a suspicion of the presence of the smegma bacillus, the destaining should be done with the absolute alcohol-acid solution, as given above. However, one need not ordinarily take into account the presence of other bacteria when the characteristically stained rod of the tubercle bacillus is found in the examination of sputa.

In the more advanced cases when the lung is broken down, elastic lung tissue may be found in the sputa.

The fibers vary much in length and breadth. The contour is double and the ends are usually curled. They may be found exhibiting an alveolar arrangement. When found they indicate a destructive process which is usually tuberculosis but may be gangrene, abscess or infarct of the lung and occasionally pneumonia and bronchiectasis. Sputa contaminated with particles of animal food may contain elastic fibres.

Their presence is therefore not to be considered characteristic unless they are found arranged in an alveolar form.

A simple method to detect them consists of boiling a portion of the thicker part of the sputa in an equal volume of a ten per cent solution of sodium or potassium hydrate.

When the mixture is reduced to a mass, it should be diluted with three or four times as much water. It may be allowed to settle for twenty-four hours or better still may be centrifuged for a few minutes. The supernatent fluid should be poured off and the sediment examined with a low power.

The above methods of examination will usually prove the presence or absence of tuberculosis. In the event of doubt, other methods of examination may be of some value, or even decide definitely the presence of tuberculosis.

The temperature of the patient should be taken at four hourly intervals during the day and evening, for a considerable period of time, especially in doubtful cases. In incipient cases even an evening febrile temperature will be found.

A blood examination in tuberculosis will show at first often a slight secondary anemia, with no increase and sometimes a decrease in the total number of white cells. The lymphocytes may be relatively increased. As the disease advances, the anemia often becomes often more marked, and especially if the patient suffers from hemorrhages. In the latter stage a marked secondary anemia may occur. When mixed infection occurs in tuberculosis of the lungs, an increase in the white cells may and usually does occur.

The urine of a tubercular patient shows nothing distinctive. Often as the disease advances there may be the presence of albumin and casts, and sometimes blood, and not infrequently the urine will give the Ehrlich diazo-reaction, which is, however, not diagnostic, inasmuch as it is found frequently in typhoid fever, measles, etc.

In doubtful cases, and in those cases where

the method may be used without undue expense or trouble, the X-Ray may be of considerable benefit in the diagnosis. The fluoroscopic screen will often show lessened transparency of the lung, or enlarged bronchial glands, opacities of the pleura, and lessened mobility of the diaphragm, which are considered by those expert in the use of the X-Ray as distinctive of tuberculosis.

Agglutination. The agglutination reaction of human serum upon homogeneous cultures of tubercle bacilli advocated by Arloing, Courmont and others as a test for tuberculosis has not been proved of much value. We must wait for further results from the use of the test before it is accepted. Its use is not difficult and it is not dangerous to the patient. The reaction is sometimes positive when tuberculosis is not present and negative when the disease exists.

Cytodiagnosis. Cytodiagnosis is applicable only in those cases of tuberculosis involving serous cavities. When an exudate exists the test may be made. As tuberculosis of the lung often begins as a pleurisy, the test is important. If a pleurisy can be diagnosed as a tubercular process, the management of the case may be rationally applied to prevent a further extension of the disease.

Cytodiagnosis is based upon the fact that different tissue cells react to different reagents. It has been proved that acute tubercular exudates contain an excess of lymphocytes while non-tubercular exudates contain an excess of polymorphonuclear neutrophile cells. The fluid found in serous cavities in heart and kidney disease contains many endothelial cells. Without going further into the subject here, it may be definitely stated that the test is of value in determining the bacterial cause of acute exudates.

The method of making the test is as follows: About 15 c. c. of the fluid is defibrinated by adding a few small glass balls to the fluid and shaking them together until all of the fibrin is deposited. The supernatent fluid is then poured off. The remaining fluid containing the fibrin is then spread upon a cover slip and fixed by heat. The preparation is stained with Ehrlich's triacid stain and a differential count of the white cells is made.

An excess of lymphocytes indicates tuberculosis.

The test is not reliable in chronic inflammations with exudates.

The Tuberculin Test. Tuberculin as a test in tuberculosis has its advocates, who probably outnumber those who object to its use. There can be no question that the new tuberculin (T. R.) of Koch, and possibly some of the commercial preparations on the market, have resulted, when used, for diagnostic purposes, as well as when used therapeutically, in producing an acute tubercular process, resulting in either a more serious condition of the patient or in death. It is also a fact that reaction to the tuberculin test will occur in a certain small per centage of individuals who do not have tuberculosis, and the further fact that in other individuals who have tuberculosis there will be occasionally no reaction occur. It is also true that we cannot depend upon the reaction of tuberculin in patients who have a considerable fever.

It is, therefore, a question with a good many whether tuberculin should be used at all, in consequence of

1. Its dangers.

2. Its reaction in a certain number of non-tubercular patients, and 3, its failure to react in an occasional tubercular patient.

We may well ask, are we justified in using a test which may cause the death of an individual, even though that event occur but rarely?

I have used the tuberculin test for years, and apparently without danger, until last year, when its use, with the usual precautions, in a patient who suffered from tubercular peritonitis resulted in the occurrence of an acute disseminated tuberculosis, and the death of the patient in a few days. In another case, occurring very soon after, a colleague used tuberculin as a test in a case which presented all of the clinical phenomena of an Addison's disease. A high temperature supervened, and the patient died soon afterwards.

I feel, therefore, that after this experi-

ence I shall hesitate to again ever use the substance as a test.

Should it be used, certain precautions are necessary. It should not be used in a patient who has a febrile temperature, as such patients may react to tuberculin in the absence of tuberculosis. The temperature of the patient who is to be tested should be taken at two-hourly intervals for forty-eight hours. After this has been done, a preliminary dose of one millegram of tuberculin should be given hypodermically at a time in the day so that the reaction, which usually occurs anywhere from eight to sixteen hours after the injection is given, may be observed. I have usually given it at ten to twelve o'clock at night, the reaction occurring usually somewhere from eight to twelve o'clock the next day. Usually the reaction consists of a general feeling of malaise, with often headache, backache, a feeling of muscular soreness, with pain at the site of injection, a feeling of chilliness, sometimes a chill, with a rise in temperature anywhere from one to four or five degrees F. The pulse usually increases in proportion to the temperature. After twelve to twenty-four hours, or sometimes longer, the patient returns to a condition similar to that of the period before the injection.

If there be no reaction, a dose of two or three millegrams may be given after another forty-eight hours interval, and if this is negative, a third injection of five millegrams may again be given after two days. If there be no reaction to the final dose I consider the test conclusive.

I have in the above not mentioned the fact that tuberculosis of the lungs may occur as an acute process, commonly known as acute pulmonary tuberculosis or galloping consumption. This form of tuberculosis is not as important as the chronic tuberculosis, which has been considered above, for the reason that it usually occurs suddenly, as an acute process, often with many of the symptoms of pneumonia, and is associated with a high fever, rapid respiration, a cough, with a profuse amount of expectoration, frequently containing blood, not infrequently pulmonary hemorrhages, loss of appetite and rapid emaciation, associated with diarrhea. The disease may result from a primary tubercular focus of the lung or of some other part of the body. Death supervenes, as a rule, in anywhere from two to six weeks. Its danger to the community is chiefly the fact of its existence. If it is recognized, as it may be readily, a proper care of the person of the patient, and a destruction of the sputum, will safeguard the household and the community.

Another form of tuberculosis is usually not recognized, and is, as a rule, less dangerous to the community than the chronic form. This is what is called acute miliary or disseminated tuberculosis. It usually occurs in an individual who has an old tubercular focus in the lung, or peritoneum, kidney, bone, etc. The course of the illness is not unlike that of typhoid fever, inasmuch as the patient suffers usually from a continuous fever, rapid pulse, delirium, sometimes coma, associated with physical evidence of disturbed respiration and circulation. The physical evidences over the chest may be negative, or nothing more than that of bronchitis. The respirations are rapid; the mucous membranes of the lips, mouth, eyes and the finger nails are usually cyanotic, and these disturbances of respiration, circulation and want of oxygenation of the blood are entirely out of proportion to the physical signs present in the case.

I shall not attempt a differential diagnosis of pulmonary tuberculosis. It is true that it may be confounded with pneumonia, chronic bronchitis, bronchiectasis, abscess of lung, gangrene of the lung, la grippe of the respiratory passages, etc. A satisfactory differential diagnosis would entail a long description of these various diseases which would occupy much space and more time than can be alloted to this paper. Besides, if the physician will make a thorough examination of the patient and utilize every aid which experience and modern methods afford, he may arrive at a diagnosis directly. In my opinion it is not so much a want of knowledge or a dearth of instruments of precision, which permits so many cases of beginning tuberculosis to remain undis-

covered as it is the lamentable indifference or laziness of the physician in examining his patients.

If this symposium will arouse the interest of the medical profession and the people for whom they care and make them more alert in the detection of the disease, a wonderful good will have been accomplished.

THE DUTY OF THE STATE IN RESTRICTING TUBERCULOSIS.*

BY HAROLD N. MOYER, M. D.

With an increasing recognition of the infectious nature of tuberculosis has come a tendency to urge legislation that should restrict the spread of the disease by quarantining the consumptive. The educational effect of this propaganda is apparent in certain legislative enactments which have tended to impose burdensome restrictions upon the consumptive and his friends. In certain communities to which consumptives commonly resort, something like a panic has developed due to the fear of contagion. Teaching of this kind is pernicious in the extreme and will ultimately fail of its aim. A shotgun quarantine and a most rigid segregation would not materially restrict the spread of tuberculosis. Such a view of tuberculosis does not express the underlying factors by which it is propagated. It does not recognize that tuberculosis is a house and factory bred disease, and while the element of personal contagion is present, it is by no means the dominating factor. The most important lesson that recent years have taught in the study of tuberculosis is that individual resistance is the important factor in preventing its spread. Large numbers of autopsies show that a very large percentage of those who die, have at one time in their lives been infected with tuberculosis and have recovered. This shows that the element of exposure is almost universal, and that no matter what care an individual may take to avoid personal contact with consumptives, he will almost inevitably acquire the disease. It also shows that the element of vital resistance is the most important factor in its treatment and care as more than two-thirds of those who get tuberculosis recover spontaneously and never know that they have the disease. The reported cases of personal contagion show that it plays only an insignificant role in the spread of tuberculosis, particularly if we eliminate those cases in which the environment is the same and make proper allowances for lowered family resistance, which is the main factor in what is understood by heredity as applied to tuberculosis. A full recognition of these facts would prevent unnecessary laws restricting the movements of the tuberculous. Such laws are essentially cruel and they create in a community an unnecessary dread of the individual afflicted with the disease and consequently lead to great hardship with no corresponding advantage. It is doubtful if any system of compulsory notification would be of value, particularly if it were coupled with a system of notification by which it would become known that a particular individual was suffering from tuberculosis. A further and very good reason why laws of this kind should not be passed is the doubt which still remains as to exactly how tuberculosis is spread. When the bacillus was first discovered it was a natural conclusion that the expectoration of consumptives dried and pulverized and inhaled by healthy individuals was the means by which the disease was conveyed.

No one has definitely proven that this is the chief method of transmitting the disease, but it was so fascinatingly simple that it at once gained general acceptance. It is still the favorite theory though some very good observes such as Behring believe that almost the sole means of spreading tuberculosis is by ingesting the bacilli with the food. In view of these uncertainties and of the folly of attempting to limit by segregation or other means the movements of the chronic tuberculous, restrictive and compulsory statutes should not be enacted. The work of the state should be limited to the education of the consumptive and his family with the active cooperation of the family physician.

One of the most important problems in the restriction of tuberculosis is the early

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recognition of the individual case. The significance of the early loss of appetite, sleeplessness, slight cough and the general failure of health is not appreciated until abnormal sounds develop in the chest or there is abundant sputum together with fever and night sweats, the unquestioned signs of tuberculosis. When this stage is reached the opportunities for treatment are lessened, and the possibility of arresting the disease is limited. Such an individual for a number of months after this stage is reached becomes an active culture ground for the breeding of the bacilli. Hence from the standpoint of restriction the recognition and cure of the individual case early in the disease is most important. In this way the production of the contagion is limited and the liability of spreading the infection to others is lessened. One of the most important of the early diagnostic signs is the recognition of the presence of the tubercle bacillus in the sputum. It may be safely asserted that a large proportion of the cases of consumption in this state do not have their sputum examined from the beginning of the disease to its end. While it is easy to make a diagnosis of consumption in the late stages without the examination, it is most important that infected cases should be recognized in their incipiency. The state through the Board of Health should undertake the examination of sputum. This could be readily done with a trifling expense and would place the state authorities in touch with a large number of cases of tuberculosis. Many physicians are not equipped for examining sputum and even where they are it is a considerable burden to put upon the profession in cases of poor patients who can not afford to pay a proper fee. The state should undertake to examine all sputa forwarded to it by individuals or by the profession. In this way a large number of cases would be brought to the attention of the authorities and an active educational propaganda started. This should include printed instructions, of course through the physician, if one were in attendance, on the nature of tuberculosis, the means by which it is spread, the care that should be exercised to protect others and the importance to those who are exposed to similar surroundings to avoid them and to live more in the fresh air. In addition such a general outline of instruction as would limit the spread of the infection. The effort of the state should be not to supplant the physician where one is in attendance, but to supplement and to strengthen his efforts in prescribing fresh air, food, etc.

State aid in the establishment of sanitoria for consumptives is most important. It is impossible for the state to provide for only a small fraction of the consumptive poor, but the educational value of two or three sanitoria in different parts of the state would be incalculable. It would be an object lesson to the people of the state in the care of such cases; through it they would learn the value of the open air treatment, good hygiene, and nutritious food as well as rest. Fortunately the cost of such sanitoria are not great, as elaborate and expensive buildings are not necessary. A simple though durable construction on the colony plan in which the patients pass the whole time in the open air or as nearly as may be is all that is required. These sanitoria would furnish object lessons to the people of the state on the management of tuberculosis which, after all must be the main reliance in preventing the spread of the disease. The early and prompt restoration of all curable cases is the most important item.

Above all the profession in the rural district should rise to the imoprtance of the occasion and there should be established by physicians throughout the state private sanitoria for the treatment of consumption. All that is required is a suitable site, arrangements for feeding patients and a simple medical equipment. Tents have been demonstrated to be by far the best dwelling places for tuberculous patients and it is possible to have patients dwell in them the entire year, even in a climate as severe as ours.

The state owes something to its dependents confined in asylums, as well as those in prison. The mortality from tuberculosis in public institutions is far too high. Already steps have been taken in certain institutions to obviate the large death rate from this disease. The New York State Hospital for the

Insane on Ward's Island has demonstrated the value of outdoor treatment for the tuberculous insane and steps should at once be instituted to meet the requirements of the institutions in the State of Illinois.

To sum up the duty of the state in relation to tuberculosis at this time is:

(1) The establishment of a state laboratory for the examination of sputum which would be available for both the profession and the citizens of the state. An adjunct to this would be the dissemination of correct ideas on the management of tuberculous cases and the avoidance of infection.

(2) The establishment of one or more sanitoria largely for the educational effect, and not with the hope of caring for any considerable number of consumptives, but to demonstrate that hygienic and home treatment in our climate is successful and practical.

(3) Drastic legislation such as compulsory notification of tuberculosis cases, the quarantine of tuberculosis or other measures which teach that the individual consumptive is a danger to those about him are to be deprecated, and are against the interests, not only of the consumptive himself, but they do not protect his associates.

THE TREATMENT OF PULMONARY TUBERCULOSIS.*

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It is obviously impossible in the brief time suitable for an occasion such as this to enter upon anything like a complete discussion of the treatment of pulmonary tuberculosis. Each case presents its peculiar difficulties and problems for solution and I must therefore be content with an effort to sketch what appear to me as the more essential principles underlying our attempts to assist nature in effecting a cure. Detailed descriptions of the use of any of the thousand and one drugs and methods of treatment which have been and still are advocated must be omitted. These must be sought in the very extensive literature of this subject. The Index Medicus of 1903 lists something over five hundred articles upon the subject of the treatment of tuberculosis as appearing in the medical journals of the world during the past year. This very number indicates their value.

While not properly a part of a paper upon treatment, the matter of diagnosis is of such paramount importance that a word may be permitted me, even though the subject has been so ably handled by those coming earlier on the program. The first and absolutely necessary essential to successful treatment is an early diagnosis. If this is delayed until a considerable portion of one lung or until distinct changes are manifest in both lungs, the chances of recovery are so slight that only a stay in the inevitable course of events can be hoped for. The earlier the diagnosis is made the greater are the chances of recovery. The all too common error of delay in the diagnosis of pulmonary tuberculosis is due largely to the fact that the profession is unwilling to make the diagnosis during that stage of the disease in which only a probable diagnosis can be made. This unwillingness is very natural for a diagnosis of consumption carries terror to the heart of the patient and friends and the treatment requires such a radical change of habits and manner of living, that a doctor hesitates to take the responsibility of such action unless he is certain of his diagnosis. An absolutely certain diagnosis rests upon the demonstration of the tubercle bacilli. Yet a very large percentage of the cases can be diagnosed with a high degree of certainty before the bacilli appear, and experience has taught us that the period during which the most can be accomplished is the pre-bacillary stage. When one compares the number of cases of tuberculosis, active or cured, found on the autopsy table, with the number of cases found in practice, it becomes at once manifest that we are too unwilling to make this diagnosis. I believe that whenever there are reasonable grounds for suspecting a pulmonary tuberculosis, the patient rather than the disease should be given the benefit of the doubt. The patient should be treated as if

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the diagnosis of tuberculosis were certain and such treatment should be continued until it becomes manifest that the diagnosis is wrong or until the disease is cured.

The adoption of such a guiding principle in doubtful cases will lead one into a certain per centage of errors. It has lead me to make a probable diagnosis of tuberculosis in cases which by their later course proved to be some other form of pulmonary infection, but I have never yet regretted the error.

I believe that it can be laid down as a general principle that whenever any condition requires for successful treatment the early employment of certain definite means, such means should be employed whenever a reasonable diagnosis can be made. The diphtheria antitoxin should not be withheld until the diagnosis is proven by the demonstration of the bacilli. The excision of a suspicious tumor should not be delayed until the anatomical diagnosis is certain. So too the treatment of a suspicious pulmonary infection should not be delayed until the nature of the infection is proven by the demonstration of the tubercle bacilli. In their struggle for existence, give the patient rather than the disease the benefit of the doubt and render your aid too early rather than too late.

Nothing truer has ever been written in regard to the treatment of tuberculosis than this quotation from Cornet "The physician can accomplish nothing without the co-operation of the patient." But the physician has no right to expect this co-operation unless he is perfectly frank with the patient. No one can reasonably be expected to alter his manner of living for months or years and subject himself to the restrictions and privations necessary for a recovery from tuberculosis because of some euphonistic diagnosis such as bronchitis or catarrh of the lungs. If a tuberculosis exists say so, not brutally but unequivocally, and be glad that at the same time you can assure the patient of reasonable prospects of recovery providing he gives his hearty and earnest co-operation, not for a few weeks but for months and years if necessary.

Moreover it is impossible for the physician to fulfill his higher and broader duty, his duty to the race, without the conscientious and intelligent assistance of the patient. Each case of tuberculosis is a potential center of radiation from which other cases may arise and the doctor's highest mission is to prevent this. Fortunately there is no conflict between the doctor's duty to his patient and that to mankind. It is not necessary to isolate the patient in institutes for this purpose nor should the patient look upon himself as a source of unavoidable danger to his friends. Contact with tubercular patients can be safely continued for years, providing only that the sputum is properly disposed of. It is not necessary to here discuss the numerous methods of disposal of the sputum which have been devised, but I wish to draw renewed attention to the fact that sputum sprayed from mouth and nose when sneezing or coughing is perhaps of even greater danger than that expectorated into cup or cloth. This should be explained to the patient and the mouth and nose should be carefully covered whenever the patient sneezes or coughs.

It is perfectly evident that no patient will properly destroy his sputum unless the reasons for such trouble are explained to him and such explanation must be preceded by a frank statement of the nature of his disease. The necessity of the proper disposal of the sputum is now admitted by all and no doubt were every case of tuberculosis recognized as soon as the tubercle bacilli appear in the sputum and every bit of sputum properly destroyed, tuberculosis would soon disappear from the world. The impossibility of this ideal is no excuse for not doing what we can.

In taking up the treatment of this disease we should keep clearly before us the limits of possibility in order that we may not attempt the impossible. I believe fully that the drug has not yet been found which has any direct influence upon the bacilli and that all efforts to directly destroy the bacilli destroy the patient, in other words, I am convinced that all of the antiseptics which have been used with this idea in mind and I do not recall one which has not been used

for this purpose, do more harm than good. I do not consider that efforts to discover such a drug are absolutely hopeless, but it appears to me more likely that something may be found which will neutralize the toxines, as the diphtheria anti-toxine does the toxine of the diphtheria bacillus, and thus enable the host to resist the influences of the unwelcome guest. It also appeals to me as likely that such a body when found will be a biological product of either the human or bovine variety of the tubercle bacillus. There have been and still are in use a number of these bodies but even after the passage of years no one of them has been able to establish itself in the confidence of the profession. Because of the chronic course of this disease any method must be slow in its establishment, but sufficient time has elapsed to try and find wanting a considerable number of these biological products. Others are still being employed and some one of them may prove to be the solution of this great problem.

One of the most conspicuous of these biological products still under trial is the tuberculine which in the hands of some is yielding satisfactory results. I cannot do better than quote the conclusion of Pottenger, based upon reports collected from literature and by personal letters from all over the world, covering 589 cases treated during the early stage of the disease with 84% of apparent cures.

There is scarcely a drug in the pharmacopea, scarcely a method, physical, electrical, hydropathic or mechanical which has not been tried again and again in the treatment of pulmonary tuberculosis and yet out of all this careful and conscientious effort no drug or method has emerged triumphant. The only thing upon which all are now agreed is that the patient must be supplied with all the necessaries of life in liberal quantities and of the best qualities. That the energies of his body must be conserved and strengthened in every way, in order that the healing power inherent in us all may bring about a cure. Drugs and other therapeutic means are to be employed to combat individual symptoms as they arise, but the disease itself must be left to nature.

This would seem to be but small return for all our work but it is in reality much. We have learned the cause of the disease. We know much, although not yet all, of the methods by which the disease is spread and can teach the people how to protect themselves. We have fulfilled our highest function, the discovery of methods of prevention. We have also learned the importance of pure air and sufficient good food.

The first and most essential thing is to supply the patient with good pure air. I believe that when it is possible the patient should be removed to some one of the health resorts where the climatic conditions have proven favorable to these cases but unfortunately a very large per centage of tuberculous patients are not able to stand the expense of such a change. One of the most important new facts in the treatment of this disease is that the patient can be supplied at home with the necessary air. Nothing was more hopeless than these cases so long as it was believed that a change of climate was absolutely essential. We realize now that much can be done in the way of supplying an abundance of air even in so crowded and otherwise undesirable a place as Chicago. If it can be done there it can be done anywhere. This is not possible in all parts of the city, but there are fortunately many places, available to those of even the slenderest means, where an abundance of fresh air can be supplied. There are many outlying districts, easily reached by a single car fare, where the necessary open space can be obtained, and if the family refuses to remove to such a neighborhood and persists in remaining in a crowded, ill ventilated flat the case is practically hopeless.

The family should take either some flat or house where there is a back yard in which a tent, or still better, a board shack, may be erected for the patient. Such a shack can be built at very small expense. It should be so proportioned as to contain about 1000 cubic feet of space and should be built of unmatched boards so as to provide an

abundance of ventilation, even when the weather is such as to require the closure of most or all of the windows. The floor should be raised from the ground sufficiently to secure dryness. The sides should be enclosed for about four feet from the floor. Above this line the walls should be of windows, arranged in such a way that they swing out from hinges at the top. The advantages of the arrangement of the windows are that they are inexpensive and can all be open at once even in case of rain. Opening outward they serve as a canopy and prevent the rain beating in, in a way which sliding windows do not. The roof should be rain proof.

In such a building, when the windows are open, the patient is practically out of doors and yet can be easily protected from rain and yet can be easily protected from rain and if necessary from direct draught. Furthermore to the exposure, if that is necessary, and there is no doubt that the doctor will often meet with opposition from the family which can only gradually be overcome as the improving condition of the patient allays the fears and traditional opposition which many people show to an abundance of air.

The furnishing of this house should be of the simplest. A rug by the bed side, a table, a chair or two and the bed. The bed should be a simple iron bed, with comfortable mattress and springs. The covering should suit the temperature and be so arranged as to prevent the patient becoming uncovered during sleep. A sleeping bag or some similar device may be employed for this purpose. The night clothing should be flannel, certainly so if the patient is sweating at night.

It is obviously useless to attempt to heat such a structure as the one suggested and usually the patient will require nothing more than an abundance of clothing. Even in the coldest weather, nothing more than a hot water bag is required. The patient should look upon this house as his home and here he should spend his nights and those portions of the day which are spent indoors.

The plan as outlined above is merely a suggestion, the details must be varied to suit the circumstances of each case. It may, for example, seem best to keep the patient upon the large rear porch of a flat building or upon the roof of the house. In other cases it will be necessary to use a room in the house although this should be avoided if possible. The essential thing is to supply the largest possible amount of the best possible air.

The next important question is that of proper food in sufficient amounts. Because of the great variety of individual tastes and preferences, of the frequency with which we find more or less complete failure of appetite and the great differences in the digestive powers of the different patients it is difficult to lay out any general scheme. Here even more than with the question of air supply it is necessary to individualize. Each patient should be a subject of special study. The patient should take as much food as he can digest and usually this is more than the appetite demands. The food should be varied in character, simply prepared and attractively served. Due attention should be paid to supplying the various food elements but the albumenoids and fats are best supplied in rather larger proportions than in the dietary of a normal individual. Because of the usually feeble appetite, the food is best served at frequent intervals, for example, the three usual meals and a lunch in the middle of the forenoon, about four in the afternoon and again before retiring. The amount taken each time must be varied to suit the circumstances but with patience the amount can be gradually increased until the total in each twenty-four hours is satisfactory. Care must be taken not to overdo the matter of feeding and the gastro intestinal tract must be watched for evidences of indigestion and the faeces should be examined at intervals for undigested food particles. It is manifestly both useless and harmful to put into the digestive tract material in quantities or of qualities which cannot be handled. The directions given to the patient should be very definite and specific. So much of this, so much of that, et cetera, and at such and such fixed hours. Both patient and doctor should realize that these directions will often need changing

from time to time, and the doctor should see the patient at frequent intervals to see that all is going well with the digestive organs and that the food supply is sufficient and of proper character. The proper feeding of these cases is the most difficult problem of all and requires more patience and intelligence than all else combined.

Drugs and other methods of treatment are often required to stimulate the appetite or to aid digestion, but any discussion of these would lead too far and would be inappropriate to a quasi popular article such as this.

A third question of importance is that of exercise. What patients should exercise, how much and in what ways? It may be laid down as a general rule that cases of tuberculosis with a temperature should not exercise. When the temperature disappears, exercises should be employed, but the amount and character should be adapted to each case and varied from time to time as the case requires. As a general rule the exercise should be mild and for short periods and always in the open air. Patient should always stop well before any exhaustion.

In the handling of all disease against which we have no specific, the use of drugs is confined to the relief of symptoms. The symptoms which may appear for treatment in the course of tuberculosis are so numerous and the methods of handling are so diverse that it has seemed best to avoid any discussion of them with the exception of the most common of these. First among them may be mentioned the fever. Numerous authorities advise the use of antipyretic drugs, but I believe that here as with other prolonged infections, they should not be used. We should rely rather upon hydrotherapeutic measures, which are easily applied, simple, effective and harmless.

Cough is not usually sufficiently troublesome to require medication, but if it is, the creasote or guaiacol, either with or without a sedative, will prove most generally satisfactory. Sweating may require atropine in very small doses, but many cases are markedly benefited by the use of salt baths.

A wide variety of tonic preparations are useful and consist generally of varying combinations of iron, arsenic, quinine, strychnia, phosphates of various sorts. Cod liver oil, so commonly employed, is of value, but should be regarded rather as a food than as a drug, and it is only as a food that it accomplishes anything.

THE ANNUAL ECONOMIC LOSS TO ILLINOIS FROM TUBERCULOSIS.*

BY HOMER M. THOMAS, A. M., M. D., CHICAGO.

It is evident that our consideration of this topic must be more or less conjectural. From the very nature of this subject any conclusion reached must be more theoretic than demonstrable. Scientific accuracy of statement is not possible. It therefore follows that the conclusions reached in this paper are not susceptible of scientific demonstration, but must rest for their acceptance upon the effort that has been made to avoid any extravagant conclusions. Every step made in the compilation which is to follow has been most carefully considered, both from the standpoint of practical as well as theoretic data, and is therefore presented in the belief that the totals reached are in every way conservative, and even much below the actual economic loss sustained to Illinois from tuberculosis.

Through the untiring efforts of statistical experts employed by the State Board of Health, it is possible to present for the first time, scientifically accurate data as to the total number of deaths from pulmonary tuberculosis in Illinois for the years 1902-1903. These totals are as follows. For 1902 the number of deaths from all form of tuberculosis in Illinois was 6,895. The total number of deaths from pulmonary tuberculosis in Illinois for 1902 were 6,011. The total number of deaths from all forms of tuberculosis in Illinois for the year 1903 were 7,026. The total number of deaths from pulmonary tuberculosis in 1903 was 6,066. Again the total number of deaths from other forms of tuberculosis in Illinois for the year 1902 were 884. The total number of deaths from

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other forms of tuberculosis in Illinois for the year 1903 were 960.

The mortality from pulmonary tuberculosis by the month for the year 1902-1903 is as follows:

	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1902....	619	676	672	633	602	585	544	542	522	523	479	499
1903....	642	626	696	641	634	579	553	529	504	564	507	551

Computed for the death certificates as issued for the year 1903 the average duration of illness was—1 year, 5 months, 20 days. The average age of all those dying from pulmonary tuberculosis was 34 years, 10 months, 28 days. It is of interest also to note the number of deaths which occured at the stated age periods.

	1 month to 1 year.	1 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.
1902.....	161	210	111	143	549	1,974	1,535	967
1903.....	192	234	107	149	561	1,987	1,497	1,010

	50 to 60.	60 to 70.	70 to 80.	80 to 90.	Over 90 yrs	Age not stated.
1902.....	566	429	178	29	1	40
1903.....	645	337	202	29	6	30

The deaths due to tuberculosis (all forms) in—

	1902	1903
Males.....	3,621	3,660
Females.....	3,274	3,366

Percentage of total mortality due to tuberculosis—

1902.....11.27%
1903.....11.51%

Let us now attempt to estimate the average cost of living as a basis for computation of the expense of raising a child up to fifteen years of age. As to the cost of living, the Daily News Almanac for 1904 on Page 348, being a tabulation from the November 1903 Bulletin of Labor shows the average cost of food in a family of five persons. This of course varies with the relative cost of various supplies of different years, as well as in different sections of the country. It is not far from $340 per annum. I find the tabulation taken from Vol. 2, Report of the U. S. Commissioners of Labor, (Carroll D. Wright) Page 1986-1993, showing that in Massachusetts, in a family of two, with three children, the total expenditure is divided as follows:

Food	46%
Clothing, rent, fuel, lighting	36%
Other purposes	18%

Using these proportions with an estimate from the other table, a family of five persons would expend—

For food	46% or $340
For clothing, etc	36% or 246
For other purposes	18% or 132
Being a total of	$736

This would give an average of $147.00 annually for each member of the family. In order to be very conservative in our estimate I figure that it will cost at least $2.00 a week to raise a child until it reaches the age of fifteen years. Based upon this estimate it would cost $1,500 to rear a child up to fifteen years of age. Assuming that up to twenty years of age no loss is involved, beyond the cost of bringing up those who have died at the rate of $100 a year for the first fifteen years of life, the deaths at those ages represent a loss of about $1,187,800.00. Assuming that for those living and diseased between the ages of twenty and sixty, about 200,000, the impaired condition represents a loss of earning and saving capacity averaging $150 for the current year, the total loss aggregating $30,000,000.00. Assuming that for those dying between the ages of 20 and 60 the loss of future savings may be estimated as equivalent to a present value of $1,000.00 for each person, these deaths 5,139 represent a loss of $5,139,000.00. Assuming that for those above the ages of 60 or not classified no pecuniary loss is involved, beyond the extra expense of caring for them in sickness, estimated at about $50 per annum, about 4,500 cases living, we have an extra expense of $225,000.00. If the different assumptions are not extravagant, and it does not appear possible for them to be so, they indicate a total annual waste by reason of tuberculosis of $36,551,800.00.

With the recent annual death rate in Illi-

nois from tuberculosis of 7,026 deaths, they would probably represent a total of over 300,000 living sufferers from the disease at the present time. This seems a reasonable estimate in view of the proportion of deaths. The deaths from tuberculosis are 11% of the deaths from all causes. Estimating 300,000. consumptives in the State at the present time is on the basis of only about 6% of the entire population of the State, 5,000,000 people.

From some recent estimates, I assume that men employed in ordinary occupation involving no unusual strain or hazard, tending to shorten their lives, begin effective service at the age of 20 and retire at about 60 to 70, say on the average 65, completing an effective service of about 45 years.

Assuming that such a man is earning $500 a year of which one-half is necessary personal expenses, the balance $250 per annum accruing to his family; in case of his death his family would lose his income of $250 which treated as an annuity upon his life, capitalized at 3½% at the date of his death would represent a loss, should he die at the age of 20, $4,900.00.

Should he die at the age of 30, of $4,377
Should he die at the age of 40, of 3,620
Should he die at the age of 50, of 2,535

An income of $2,000 of which $1,000 accrues to the family would represent a loss

In case of death at age of 20, of $19,600
In case of death at age of 30, of 17,510
In case of death at age of 40, of 14,480
In case of death at age of 50, of 10,140

Possibly it would be more accurate to regard the probable term of service as having been reduced by the disease, say one-half rather than cut off entirely. In that case the loss to the family would be represented rather by the income lost during the later half of the term, but this would be a loss in every case acquiring the disease, rather than at the time of death. Pecuniary loss in the two cases above cited would be about as follows:

Age 20 on $250, $1,330; on $1,000, $5420
Age 30 on 250, 1,372; on 1,000, 5,490
Age 40 on 250, 1,305; on 1,000, 5,220
Age 50 on 250, 1,057; on 1,000, 4,230

In the more hazardous or more arduous occupations where the strain is great and the term of service thereby materially shortened, there is less difference against the disease; there might be cases in which there is little to choose between the effects of the occupation and the disease.

In some cases the community brings up the child, in others the family or both contribute. Yet the investment is not selfish, for those contributing rarely receive the direct return; the child is trained for general usefulness, from which the community or others than the contributers receive benefits, so the loss is properly that of the community.

Any data based on general statistics should be modified as suggested above by considering the effect of the disease in shortening the period of efficiency. Damage in case of death or disability caused by accident may be fairly measured by the immediate loss of income for the average term of efficiency. Tuberculosis shortens such terms but does not in all cases produce immediate disability. Thus assuming that from the time of incurring the disease, the term of efficiency is shortened one-half, the average damage might be ascertained by some such method as suggested above, but this is apportionable among all who incur the disease rather than among those only who die; it measures the loss of efficiency in the entire group.

It is a grewsome task to attempt to reduce down to a cold calculating basis of dollars alone the value of a human life. Nor can we estimate economically only in the most general way, the value to the State of any or all the lives lost from tuberculosis.

The possibilities for good or evil of any life can never be estimated until that life has closed its career. This, however, we do know, that life is the final product of years of preparation and growth. Being the last it is the most sacred, that which is the most sacred should receive the greatest protection.

The State represents the Sovereignty of the people. It is typified through its legislature, its Senate and its Governor. Through legal enactment there is conserved to the

people the best environment for their mental, moral and physical welfare. As in mental growth we have our vast system of public schools, extensive libraries and famous universities. The moral uplifting of our people is accomplished through the agencies of our churches and vast philanthropic movements. We aim to protect the physical being from danger and disease by wise enactments against our water pollution, impure air, and elaborate quarantine against the invasion of epidemic diseases.

Since we look to the State for protection of our mental, moral, and physical well being, we must be increasingly gratified that the numerous and wide spread efforts cannot be computed in figures. They can only be most generally estimated as to the relative value of each life rescued from the ravages of the wide spread disease.

It at once becomes self evident that the economic duty of the State lies in the direction of so legislating that danger from infection of dried tubercle bacilli is reduced to a minimum.

It is absurd to suppose that we can through legislation, or any other active government process stamp out the existence of tubercle bacilli in our State. They have existed from time immemorial and doubtless will continue to do so, but the danger that lurks in the dried tubercle bacilli to the public health is at once so potent and fruitful as a source of spreading the ravages of this disease, that it becomes an economic necessity for our State, as far as possible, to prevent the further contamination of public health from dried tubercle bacilli.

The victims of tuberculosis are mostly of the active working age, their deaths coming at the time of the period of their greatest usefulness to the State, represents the largest amount of economic loss. These deaths are injuring society in a most vital way. Men and women are taken from us at the zenith of their greatest powers for usefulness and activity. It is estimated that thirty-five per cent of the people who die from tuberculosis are from 15 to 34 years of age and that 20% are from 35 to 45 years of age. Since such is the case, and the economic loss so great and so evident, it follows that we simply cannot afford to allow our State to be devastated by the every day dangers from a disease at once so general and fatal. We must fight tuberculosis, aim to check its ravages, and finally bring about its practical eradication. The necessity for protection of our people against such a disease becomes more and more evident. We do not insist that the paramount duty of the State is the care of its sick, but we must bear in mind that to take care of those suffering from tuberculosis is of itself an economic as well as philanthropic measure. The State generously and faithfully cares for the deaf, dumb, those of feeble mind, and insane, and others unfortunately diseased, but at present goes no farther than the care of these. At present no provision is made for the care of the tuberculous, whose ailments are every day an element of danger to the health of the people of the whole commonwealth. As a result of the deaths from consumption each year the State at once loses the valuable products and activities of thousands of lives. With these lives the State has a direct money interest.

We know that 60% of the living people are, or have been infected with consumption; that it is infectious and the germs are developed by dampness, impure air, bad food, close contact, as in schools, tenements, penitentiaries, etc. This being the case, it would seem that it is part of the State's business to give freely of its money to the poor, to the Boards of Health, that the sick poor may be properly housed, have plenty of fresh air and sunlight; or if that is not feasible, provide sanatoria or isolation hospitals that the patients may have the best of care and can be removed from the danger of spreading tubercular infection.

Our State recognizes pulmonary tuberculosis as communicable. No laws have been made to prevent the spread of tuberculosis, but steps have been taken and laws created to prevent the spread of tuberculosis among cattle. Is it more essential to provide against the spread of tuberculosis in cattle than among human beings?

At the present time there are laws enacted

and stringently enforced prescribing the number of cattle that shall be placed in railroad cattle cars. This is a beautiful State care for the rights and comforts of the helpless dumb brutes. In Chicago no such considerate State care is exercised for the protection and sanitary welfare of human beings. A Chicago street car will comfortably seat 32 persons and allow easy standing room for ten persons. It is not infrequently the case, that the same car will transport from 60 to 75 persons. Think of the possibilities of tubercular infection from such a close massing of people as well as the absolute indecency of such crowding. Since human life is made possible through the existence of the vegetable, mineral, and animal creation, would it not be well for our State authorities to at least exercise the same thoughtful consideration for the physical welfare of human beings, as they now do for those of the dumb creation?

Consumption costs the State an annual loss of thousands of lives. Many of these lives can be saved if placed in hospitals or sanatoria. In view of the excessive mortality from this disease and in order that this may be markedly diminished it is a decided economic advantage for the State to maintain hospitals for its consumptive poor. Some sanatoria claim 70% of cases cured when the patients are admitted to treatment in the earlier stages. This estimate is probably correct. Incipient tuberculosis is one of the diseases most easily cured. It is fair to estimate that under proper treatment in sanatoria 50 to 75% of the consumptive patients in the earlier stages would be cured. With 7,026 deaths from tuberculosis in Illinois for the year 1903, if we can save through the maintenance of sanatoria by the State 50% instead of 7,026 deaths there would be but 3,513 deaths. Estimating the annual economic loss to the State from tuberculosis at $36,000,000.00 or at the rate of at least $100,000.00 a day, sanatoria would save to the State annually at least $18,000,000.00.

Is it not therefore wise for the State through the erection of sanatoria to annually effect a saving of this vast sum? Viewed strictly from a standpoint of the annual economic loss, and considered wholly from its financial aspect, and laying aside all humanitarian and philanthropic considerations our State is justified in proceeding to assume the care of its consumptive poor. It is not to be expected that sanatoria will abolish consumption. The spread of contagious diseases through quarantine is not wholly prevented, and yet we continue to quarantine. The establishment of sanatoria would not only be of great economic value to the State, but would through their sanitary environments as well as educational benefit, be of great and lasting value to our State. Illinois, the State of vast industrial activity, tremendous agricultural resources and comprehensive educational institutions; the home of great Statesmen, scientists and philanthropists, must be freed from the blight and devastation of tuberculosis. Science has clearly pointed the way for the accomplishments of this end. Let us not be blind to, or negligent of our duty. Let us each and all do our share that in the end tuberculosis may forever be banished from our midst.

MORTALITY FROM TUBERCULOSIS IN ILLINOIS FOR THE YEARS 1902 AND 1903.*

BY GEORGE W. WEBSTER, M. D., CHICAGO.
President Illinois State Board of Health.

Reliable mortality statistics are the foundation of preventive medicine. For the first time in the history of this State it becomes possible to present such statistics for the years 1902 and 1903 under the law—making it compulsory for physicians to report all births and deaths.

These statistics were compiled in the office of the State Board of Health, from the original death certificates. Table No. 1 shows the number of deaths from the principal causes during the year 1902, the per centage which each is of the total mortality, and the death rate per 100,000 living. Table No. 2 shows the same statistics for 1903.

Drawing No. 1 shows, in a graphic manner

*Read at the 54th Annual Meeting, May 17, 1904.

the relative mortality from tuberculosis as compared with the other principal causes of death for the year 1903. Table No. 3 is self explanatory. These statistics are made more striking by a reference to drawings No. 2 and No. 3, showing the enormous influence of season upon pneumonia mortality as compared with its influence upon the mortality from tuberculosis.

Drawing No. 4 shows in a striking manner comparatively insignificant mortality from tuberculosis during the first 5 years of life as compared with the very high death rate between 15 and 45 years of age, the productive period of life.

The death rate by counties is very instructive and will, I hope, prove valuable. See diagram on page 360. We would naturally expect the death rate from tuberculosis to be highest in Cook County where the theoretical conditions favorable for its prevalence obtain in marked degree. Nevertheless we find the death rate higher in 1902 in the following counties:

Adams, Alexander, Franklin, Kankakee, Massac, Montgomery, Morgan, Pulaski, St. Clair, Union and White, and in the counties of Kankakee and St. Clair for 1903.

Principal Causes of Death. 1902.

		Per cent of total deaths.	Rate per 100,000 population.
Tuberculosis	6895	11.26	141.5
Pneumonia	6888	11.24	141.1
Heart Disease	4491	7.34	92.1
Accidents	3175	5.19	65.1
Kidney Disease	3169	5.18	65.0
Enteritis Infantile	3148	5.14	64.2
Cancer	2542	4.14	51.5
Congenital Debility	2512	4.10	51.5
Old Age	1985	3.24	40.7
Typhoid	1882	3.07	38.6
Apoplexy	1831	2.99	37.5
Bronchitis	1581	2.58	32.4
Meningitis	1565	2.56	32.1
Paralysis	1236	2.02	25.3
Diphtheria	1079	1.76	22.1
Ill Defined	1008	1.64	20.6
Liver Diseases	871	1.43	17.8
Suicide	742	1.21	15.2
Scarlet Fever	735	1.20	15.0
Disease of Stomach	713	1.16	14.6
Whooping Cough	544	.89	11.1
Hernia and Intestinal Obstruction	483	.77	9.9
Septicemia	453	.74	9.3
Influenza	417	.68	8.5
Puerperal Sepsis	352	.57	7.2
Diabetes	342	.56	7.0
Other Puerperal	339	.55	6.9
Rheumatism	253	.41	5.1
Erysipelas	215	.35	4.4
Epilepsy	207	.33	4.2
Malaria	187	.30	3.9
Measles	180	.29	3.6
Small Pox	67	.11	1.3

Principal Causes of Death. 1903.

		Per cent of total deaths.	Rate per 100,000 population.
Tuberculosis	7026	11.51	137.0
Pneumonia	6830	11.18	133.2
Disease of the Heart	3894	6.38	75.94
Traumatisms	3772	6.17	73.56
Kidney Disease	3616	5.92	70.5
Enteritis Infantile	3366	5.51	65.6
Cancer	2680	4.39	52.2
Congenital Debility	2287	3.74	44.5
Apoplexy	1730	2.83	33.7
Typhoid	1578	2.58	30.7
Old Age	1221	2.00	23.8
Diphtheria	1175	1.92	22.9
Enteritis, age ov'r 2 y's	930	1.52	18.1
Bronchitis, acute	924	1.51	18.
Suicide	774	1.26	15.
Whooping Cough	720	1.18	14.0
Influenza	691	1.13	12.0
Hernia	600	.99	17.0
Measles	592	.97	11.5
Cirrhosis of Liver	544	.89	10.6
Scarlet Fever	519	.85	10.1
Bronchitis, chronic	505	.82	9.8
Rheumatism	486	.79	9.4
Appendicitis	471	.77	9.3
Diabetes	415	.68	8.0
Puerperal Sepsis	383	.63	7.4
Alcoholism	328	.54	6.3
Septicemia	295	.48	5.7
Peritonitis	244	.39	4.7
Malaria	231	.38	4.5
Tetanus	225	.36	4.3
Erysipelas	180	.29	3.5
Pleurisy	166	.27	3.2
Small Pox	135	.22	2.6

1902.

Counties.	No. of deaths in Counties.	Total Tuberculosis.	Per cent.
Adams	985	121	12.28
Alexander	347	50	14.36
Bond	156	15	9.61
Boone	173	15	8.67
Brown	95	7	7.36
Bureau	497	33	6.64
Calhoun	97	9	9.28
Carroll	184	20	10.86
Cass	178	22	12.36
Champaign	528	53	10.04
Christian	315	26	8.22
Clark	313	70	22.36
Clay	183	28	15.30

Clinton	205	12	5.88
Coles	356	52	14.60
Cook	27252	3105	11.39
Crawford	276	48	17.39
Cumberland	204	30	14.71
De Kalb	310	27	8.71
De Witt	193	17	8.81
Douglas	235	30	12.76
Du Page	291	21	7.22
Edgar	312	33	10.57
Edwards	106	13	12.17
Effingham	252	30	11.08
Fayette	299	44	14.71
Ford	133	9	6.77
Franklin	295	35	11.86
Fulton	461	44	9.54
Gallatin	208	31	14.90
Greene	266	32	11.65
Grundy	273	22	8.06
Hamilton	239	43	17.99
Hancock	359	25	6.96
Hardin	88	21	23.84
Henderson	83	3	3.61
Henry	436	35	8.05
Iroquois	332	33	9.94
Jackson	299	26	8.69
Jasper	203	26	12.81
Jefferson	332	42	12.65
Jersey	169	14	8.29
Jo Daviess	204	18	8.82
Johnson	145	22	15.17
Kane	733	70	9.55
Kankakee	557	68	12.21
Kendall	84	10	11.90
Knox	489	61	12.49
Lake	440	52	11.82
La Salle	955	94	9.84
Lawrence	239	40	16.74
Lee	278	32	11.51
Livingston	371	35	9.43
Logan	411	38	9.24
Macon	514	63	12.26
Macoupin	461	39	8.46
Madison	883	66	7.47
Marion	407	51	12.53
Marshall	169	9	5.32
Mason	178	18	10.11
Massac	251	36	14.04
McDonough	302	46	15.23
McHenry	292	25	8.66
McLean	776	66	8.51
Menard	149	17	11.41
Mercer	211	26	12.32
Monroe	149	9	6.04
Montgomery	329	38	11.55
Morgan	542	68	12.56
Moultrie	154	17	11.04
Ogle	210	13	6.19
Peoria	1063	107	10.06
Perry	276	26	9.42
Piatt	202	29	14.36
Pike	350	37	10.57
Pope	134	21	15.67
Pulaski	249	47	18.88
Putnam	51	2	3.92
Randolph	306	38	12.42
Richland	148	19	12.84
Rock Island	517	53	11.25
Saline	219	37	16.89
Sangamon	1039	137	13.29
Schuyler	164	17	10.36
Scott	109	15	13.76
Shelby	282	36	12.41
Stark	99	5	5.05
St. Clair	1005	116	11.54
Stephenson	391	26	6.65
Tazewell	280	33	11.87
Union	368	39	10.59
Vermilion	795	102	12.83
Wabash	157	23	14.65
Warren	243	25	10.29
Washington	218	33	15.14
Wayne	258	39	15.12
White	422	61	14.45
Whiteside	398	28	7.03
Will	887	106	11.96
Williamson	332	39	11.75
Winnebago	590	62	10.51
Woodford	191	18	9.42
State	61144	6895	11.27

1903.

COUNTIES.	No. of deaths in Counties.	Total Tuberculosis.	Per cent.
Adams	939	104	11.07
Alexander	289	52	17.99
Bond	145	14	9.62
Boone	156	20	12.82
Brown	105	19	18.09
Bureau	387	23	5.94
Calhoun	81	7	8.64
Carroll	202	9	4.45
Cass	160	21	13.12
Champaign	467	40	8.58
Christian	309	31	10.03
Clark	202	32	15.84
Clay	107	12	11.21
Clinton	208	16	7.69
Coles	336	49	14.58
Cook	29701	3523	12.11
Crawford	212	31	14.62
Cumberland	147	15	10.20
De Kalb	308	32	10.39
De Witt	172	14	8.14
Douglas	158	23	14.55
Du Page	322	20	6.21
Edgar	300	42	14.00
Edwards	93	14	15.05
Effingham	219	23	10.50
Fayette	253	33	13.04
Ford	126	10	7.93
Franklin	173	25	14.45
Fulton	413	44	10.65
Gallatin	160	21	13.12
Greene	224	26	11.60
Grundy	250	16	6.40
Hamilton	105	13	12.38
Hancock	302	43	14.21
Hardin	72	7	9.72
Henderson	71	4	5.63
Henry	362	31	8.56
Iroquois	293	40	13.65
Jackson	285	29	10.17
Jasper	171	30	17.54
Jefferson	253	35	13.83
Jersey	161	23	14.28

Jo Daviess	228	24	10.52
Johnson	130	15	11.51
Kane	1087	105	9.65
Kankakee	590	57	9.66
Kendall	81	4	4.93
Knox	477	43	9.01
Lake	487	53	10.88
La Salle	844	76	9.00
Lawrence	170	28	16.47
Lee	266	31	11.28
Livingston	326	35	10.73
Logan	329	71	21.58
Macon	483	46	9.52
Macoupin	447	53	11.85
Madison	802	72	8.97
Marion	338	47	13.93
Marshall	131	12	9.16
Mason	179	26	14.52
Massac	164	31	18.90
McDonough	246	31	12.19
McHenry	255	19	7.45
McLean	673	58	8.61
Menard	144	19	13.12
Mercer	166	17	10.24
Monroe	122	8	6.55
Montgomery	288	47	16.35
Morgan	517	66	12.76
Moultrie	142	20	14.08
Ogle	212	19	8.96
Peoria	1122	118	10.51
Perry	223	20	8.97
Piatt	182	19	10.44
Pike	305	33	10.82
Pope	113	21	18.58
Pulaski	135	22	16.29
Putnam	48	3	6.25
Randolph	348	57	16.37
Richland	118	15	12.71
Rock Island	596	61	10.23
Saline	164	21	12.80
Sangamon	968	122	12.60
Schuyler	120	20	16.66
Scott	66	8	12.12
Shelby	271	36	13.21
Stark	94	11	11.59
St. Clair	1495	140	9.36
Stephenson	384	29	7.55
Tazewell	347	38	10.95
Union	324	40	12.34
Vermilion	768	84	10.93
Wabash	123	18	14.63
Warren	243	29	11.93
Washington	187	19	10.16
Winnebago	560	60	10.71
Wayne	191	38	19.52
White	206	37	17.96
Whiteside	328	28	8.53
Will	858	90	10.48
Williamson	240	25	10.41
Woodford	187	15	8.02
State	61037	7026	11.51

Tuberculosis.

1. Total deaths from all forms of Tuberculosis for the year 1902 6895
2. Total deaths from all forms of Tuberculosis in Illinois for the year 1903 7026

3a. Total deaths from Pulmonary Tuberculosis in Illinois for the year 1902 6011

3b. Total deaths from Pulmonary Tuberculosis in Illinois for the year 1903 6066

4a. Total deaths from other forms of Tuberculosis in Illinois for the year 1902 884

4b. Total deaths from other forms of Tuberculosis in Illinois for the year 1903 960

5. Mortality for years 1902 and 1903 by months: Jan. 619-642; Feb. 676-626; Mar. 672-696; Apr. 633-641; May 602-634; June 584-579; July 544-553; Aug. 542-529; Sept. 552-504; Oct. 523-564; Nov. 479-507; Dec. 499-551.

6. Average duration of illness (December, 1903, certificates only, computed) 1 year, 5 months, 20 days.

7a. Average age, 34 years, 10 months, 28 days.

7b. Number of deaths occurring at stated periods:

	0-1	1-5	5-10	10-15	15-20	20-30	30-40	40-50
1902	161	210	111	143	549	1974	1537	967
1903	192	234	107	149	561	1987	1497	1010

	50-60	60-70	70-80	80-90	over 90	not stated.
1902	566	429	178	29	1	40
1903	645	337	202	29	6	30

8. Deaths due to Tuberculosis (all forms) 1902, males 3621; females 3274

9. Deaths due to Tuberculosis (all forms) 1903, males 3660; females 3366

10. Percentage of total mortality due to Tuberculosis, 1902 ..... 11.27

11. Percentage of total mortality due to Tuberculosis, 1903 ..... 11.51

Death Rate in State, By Sections. 1902.

	Rate per 1000.	Per cent Tuberculosis.	Per cent Pneumonia.
Northern Section	12.54	10.85	11 85
Northern Sect'n (Cook Co. excluded)	10.32	9.61	9.17
Cook County	13.84	11.39	12 75
General Section	11.33	11.74	8.58
Southern Section	11.96	12.50	13.48

Death Rate in State, By Sections. 1903.

	Rate per 1000.	Per cent Tuberculosis.	Per cent Pneumonia.
Northern Section	12.96	11.18	12.49
Northern Sect'n (Cook Co. excluded)	8.93	9.51	7.84
Cook County	14.61	11.85	14.36
Central Section	10.02	12.21	7.47
Southern Section	10.27	12.17	9.86

FACTORS CAUSING CONSUMPTION AND FURTHERING ITS SPREAD —SUGGESTIONS FOR ITS PREVENTION.*

BY CHARLES LOUIS MIX, A. M., M. D., CHICAGO
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The total number of deaths recorded for 1900 in the whole United States was 1,039,-094. The total population for 1900 was 75,994,575, including the population of Indian Territory and of the various Indian reservations, but excluding persons on military or naval service abroad. The "registration area," consisting of Connecticut, District of Columbia, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Rhode Island, Vermont, and 153 cities in other states, in all of which area reasonably accurate vital statistics were obtainable, with a population of 28,807,269 showed 512,669 deaths, with a death rate of 17.8 per 1,000. The non-registration area, consisting of the remainder of the United States, with a population of 47,187,306 showed only 526,425 deaths, a number apparently too small; nevertheless analysis of these figures affords an approximately accurate means of getting at the total death rate for the United States, as shown by the following table:

Table 1; Population.

	Whole U. S.	Registration Area.	Non-Registration Area.
Cities or towns over 8,000	24,992,199	21,660,631	3,331,568
Rural districts	51,002,376	7,146,638	43,855,738
		28,807,269	47,187,306
	75,994,575	75,994,575	

Table 2; Death-rates in the registration area.

	Population.	Total Deaths.	Death Rate.
Cities and towns over 8,000	21,660,631	402,666	18.6
Rural districts	7,146,638	110,003	15.4

*Read at the 54th Annual Meeting, May 17, 1904.

Applying these rates to the classified population in the non-registration area of Table 1, assuming the rates in the registration area to apply equally to the non-registration area, table 3 is obtained.

Table 3; Death-rate for the whole United States.

	Population.	Rate.	Total Deaths.
Non-Registration Area: Cities and towns over 8,000	3,331,568	18.6[1]	61,967
Rural districts	43,855,738	15.4[1]	675,378
Add to this Table No. 2: Cities and towns over 8,000	21,660,631	18.6	402,666
Rural districts	7,146,638	15.4	110,003
Totals	75,994,575	16.4[2]	1,250,014

(1) Assumed.
(2) Estimated.

The total number of deaths in the United States is thus found to be 1,250,014 instead of 1,039,094; and the death-rate for the United States is 16.4 per 1,000.

Adopting the same method of computation, we find the total deaths from consumption in the United States to be 119,616 instead of 109,750 as recorded.[3]

Table 4; Deaths from Consumption in the United States.

	Population.	Total deaths.	Deaths from consumption	Percentage of deaths from consumption to total deaths.
Registration Area: Cities over 8,000	21,660,631	402,666	44,376	11.02
Rural districts	7,146,638	110,003	9,586	8.71
Non-Registrat'n Area: Cities over 8,000	3,331,568	61,967[1]	6,829[2]	11.02
Rural districts	43,855,738	675,378[1]	58,825[2]	8.71
Totals	75,994,575	1,250,014	119,616	9.57
Totals, Table 8, Cens's	75,994,575	1,039,094	109,750	10.56

(1) Estimated as in table 3.
(2) Estimated.
(3) It is assumed that the percentage of deaths from consumption is the same in the non-registration area as in the registration area.

From the table it is evident that the death-rate from consumption for the United States, exclusive of other forms of tubercu-

losis, is 9.57 per cent of the total number of deaths from all causes combined. It is highly likely that the corrected figures are more nearly accurate than the official ones; though it is cheerfully admitted that it may be quite unfair to assume that the rate of death prevailing in the registration area for 28,807,269 inhabitants will hold good in the non-registration area with 47,187,306 inhabitants.

Causes of Consumption. Narrowly speaking, the only cause of consumption is a minute organism which enters the lungs, and by its life brings death. Broadly speaking, certain conditions favor the onset and course of consumption, and careful study and thorough knowledge of these favoring conditions will enable the people to avoid them.

Sex. Sex is of influence upon the distribution of consumption. The organism causing the disease selects males in urban population, and females in rural districts, as shown abundantly by the following tables.

Table 5; showing deaths from consumption by sex in the registration area.

	Whole registrat'n area.	Cities only.	Rural districts only.
Total populations.....	28,807,269	21,660,631	7,146,638
Deaths, males.....	29,192	24,635	4,557
Deaths, females.....	24,470	19,741	5,029
Excess, male over f'm'le	4,422	4,894	472[1]

Table 6; showing deaths from consumption by sex in Illinois, for 1902 and 1903.

	Whole State.		Chicago and Cook Co.		Remainder of State.	
	1902	1903	1902	1903	1902	1903
Deaths, males.	3,149	3,159	1,672	1,837	1,477	1,322
Deaths, females	2,862	2,922	1,019	1,170	1,843	1,752
Excess, male over female	287	237	653	667	366[1]	430[1]

The latter table also shows a large increase in deaths from consumption in 1903 in Chicago and Cook county, and a corresponding decrease in the remaining counties of the state. The figures in Table 6 were kindly furnished by the Illinois State Board of Health.

1. Excess, female over male.

Table 7; showing the number of deaths from consumption in each 1,000 deaths from all causes.

	Whole U. S.	Cities only.	Rural districts only.	Registration Area.	Cities only.	Rural districts only.
Males.....	101.1	115.5	91.4	104.8	118.9	80.1
Females .	119.9	106.1	128.9	100.0	101.4	97.4

Table 7 shows that in the registration area, males suffer most, but that in the whole United States, due to the fact that the rural population is nearly double the urban, females suffer most.

Why do more males die from consumption in cities, and more females in rural districts? The answer would seem to be that in rural districts men live out-of-doors, the women indoors; in cities the reverse is true; more men are kept employed within, while the women are free to be outside at least some portion of the day. It may be objected that in cities women also are largely kept within, as indeed they are. For that reason the discrepancy between deaths by consumption in males and females in cities, (males, 115.5 per 1,000; females, 106.1 per 1,000) is much less than the discrepancy between deaths by consumption in males and females in rural districts (males, 91.4 per 1,000; females, 128.9 per 1,000). The practical lesson is that the farmer's wife and the farmer's daughters should get out of the kitchen occasionally. They should spend as much time out-of-doors as possible, work in the field being vastly more wholesome than work in the house. In cities men should endeavor to find occupations permitting the breathing of an abundance of fresh air. Recreation out-of-doors in the evening is far better than recreation in the theatre, lodge, bowling-alley, or saloon.

Age. The relation between consumption and age is a very close one, illustrated by the following table.

Table 8; showing the proportion of deaths from consumption at various ages, to the

total deaths at the same ages, in the United States and in Illinois, for 1900. See diagram on page 367.

	Under 5 yrs.	5-9 years.	10-14 years.	15-19 years.	20-24 years.	25-29 years.	30-34 years.	35-39 years.	40-44 years.	45-49 years.	50-54 years.	55-59 years.	60-64 years.	65 years and over.
United States—														
Total deaths	317,532	36,748	24,500	38,100	51,004	48,693	43,837	44,367	41,439	40,201	42,666	43,169	48,178	211,191
Deaths from consumption	4,454	1,287	2,310	9,104	16,031	15,811	12,805	10,833	8,376	6,456	5,465	4,424	3,632	7,949
Proportion due to consumption	1.41%	3.50%	9.47%	23.89%	31.42%	32.47%	29.19%	24.42%	20.21%	16.06%	12.71%	10.25%	7.56%	3.76%
Illinois—														
Total death	18,023	2,385	1,413	2,014	2,705	2,824	2,606	2,942	2,719	2,519	2,655	2,699	2,926	12,599
Deaths from consumption	239	70	98	483	929	998	861	738	558	419	364	280	216	525
Proportion due to consumption	1.33%	2.94%	6.94%	23.96%	34.31%	35.34%	30.68%	25.09%	20.53%	16.63%	13.33%	10.67%	7.38%	4.17%

The table demonstrates that the maximum number of deaths from consumption occurs between the ages of 20 and 35 years, about one-third of the total deaths during these ages being from consumption. The two sexes do not suffer equally at the same age, as indicated by table 9.

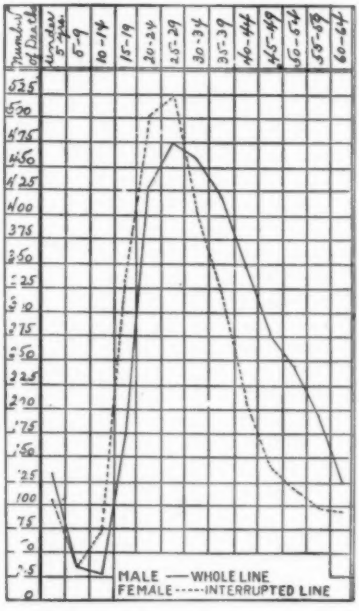
Table 9; showing the number of deaths from consumption per each 1,000 deaths from known causes at various ages, in the two sexes.

	Under 5 yrs.	5-9 years.	10-14 years.	15-19 years.	20-24 years.	25-29 years.	30-34 years.	35-39 years.	40-44 years.	45-49 years.	50-54 years.	55-59 years.	60-64 years.	65-69 years.	70-74 years.	75-79 years.	80-84 years.	85 years and over.
Deaths from consumption in each 1,000 deaths in males	14.5	29.2	60.9	183.0	275.9	310.9	285.6	248.1	206.6	168.9	137.2	110.8	80.3	62.7	45.8	31.4	18.0	10.9
Deaths from consumption in each 1,000 deaths in females	15.9	43.6	134.0	392.6	365.6	361.3	309.6	249.9	206.2	157.5	122.8	97.0	74.0	62.4	46.4	33.6	19.3	9.3

It will be observed that females, who mature earlier than males suffer earlier from

consumption. This fact is best expressed graphically in the following diagram.

Diagram 1; showing the total deaths by consumption in five-year periods by sex in Illinois, for 1900.



It will be observed that the lines representing deaths in males and females intersect at about the age of 30 years.

Table 10; showing the total deaths from consumption in Illinois, in 10 year periods, for 1902 and 1903. See diagram.

Why should young men and women die at the very time when their vitality should be at its maximum? This is a question which may be variously answered. Because of the vigor of the young, unusual demands are made upon them, in both economic and social ways. The young man works excessively hard to get his start, and succeeds unusually early in this country. The young lady endeavors to do her share toward the family support, and goes beyond her strength. Often the dissipation incident to youth is responsible for the appearance of consumption. The young man sows his wild oats and reaps death as his harvest; the black sheep of the family often dies of consumption. The young woman, who works hard all day in kitchen, factory or household, goes frequently to dances and devotes to them the time she ought to spend in sleep and rest. Often the demands of maternity are more than can be borne, and the greater number of deaths occurring in females between the ages of 20 and 30 years are doubtless due to this single cause. The practical conclusion to be reached by all young adults is that plenty of rest, sleep and fresh air are as essential to happiness and existence as food and drink. Young people contemplating marriage should not exhaust each other by long hours of courtship night after night, after the day's work is over. Moreover they should see to it that the one selected for wife or for husband is perfectly sound physically and morally.

	0-1.	1-5.	5-10.	10-15.	15-20.	20-30.	30-40.	40-50.	50-60.	60-70.	70-80.	80-90.	Over 90.	Unknown
Total deaths, 1902.....	161	210	111	143	549	1,974	1,537	967	566	429	178	29	1	40
Total deaths, 1903.....	192	234	107	149	561	1,987	1,497	1,010	645	337	202	29	6	30

Race. Race has a marked influence upon the total death-rate *from all causes,* as shown by the following table based upon the registration area.

Table 11; influence of race upon the death rate.

	Whites.	Negroes.	Indians.	Chinese.	Japanese
Population....	27,555,800	1,180,546	11,010	48,565	8,348
Total deaths...	475,640	35,710	319	914	86
Rate per 1,000..	17.3	30.2	22.8	18.8	10.3

The low death-rate among the Chinese and Japanese is due to the fact that all representatives of these races are adults, and therefore that the large mortality of child-life does not appear in these statistics.

Table 12; death-rates by age, sex and race.

	Under 1.	1-5 years.	5-14 years.	15-24 years.	25-34 years.	35-44 years.	45-64 years.	65 and over.
Whites— Males....	175.9	54.2	4.2	6.2	9.0	12.0	23.5	90.4
Females.	139.8	45.2	4 0	5.6	8.1	10.1	19.5	82.1
Colored— Males....	403.9	127.2	9.2	17.4	18.2	21.5	38.6	119.8
Females.	339.7	110.2	10.2	14.4	15.6	20.4	34.6	100.3

The conclusion reached after inspection of these tables is that colored people show a death-rate almost double the death-rate shown by whites.

Table 13; deaths from *consumption* by race.

1900.	Whites.	Colored.	Indians.	Chinese.
Total deaths, U. S.....	892,092	147,002	4,801	1,150
Deaths from consumption....	87,673	22,077	998	368
Percentage of deaths by consumption.....	9.83	15.02	20.79	31.13

Table 14; total deaths from consumption among whites and blacks by ages, based upon the registration area; year 1900.

	Under 5 yrs.	5-9 years.	10-14 years.	15-19 years.	20-24 years.	25-29 years.	30-34 years.	35-39 years.	40-44 years.	45-49 years.	50-54 years.	55-59 years.	60-64 years.	65-69 years.	70 years and over.	Unknown.
Whites— Deaths, all causes	141,131	13,969	7,696	11,763	18,689	21,436	21,230	21,259	20,334	20,124	21,372	22,733	24,867	26,742	70,376	1,658
Deaths by consumption	1,580	370	619	3,117	6,295	7,303	6,527	5,591	4,046	3,018	2,484	2,006	1,604	1,300	1,612	111
Percentage dying from consumption	1.12	2.72	8.07	26.50	33.68	34.07	30.74	25.13	19.90	15.15	11.62	8.82	6.45	4.86	2.28	6.70
Blacks— Deaths, all causes.....	12,140	1,076	919	1,657	2,671	2,500	1,955	2,083	1,932	1,705	1,750	1,374	1,288	1,027	2,636	206
Deaths by consumption....	354	139	242	611	1,021	980	667	600	447	349	256	161	110	92	100	18
Percentage dying from consumption	2.91	14.77	26.33	36.87	38.23	38.40	34.12	28.80	22.90	19.44	14.63	11.72	8.66	8.96	3.79	8.74

Table 13 demonstrates the greater vulnerability of the Negroes, Indians and Chinese, as compared with whites. The Negroes are found to be one-third more susceptible to consumption, the Indians more than twice

as susceptible, and the Chinese over three times as susceptible as the whites. A study of the deaths from consumption by ages among the whites and blacks shows the greater vulnerability of the latter to lie in the first 20 years of life, as shown in table 14. The practical conclusion is that health officers and inspectors should pay more attention to the young than to the old negro.

The racial influence compiled from the statistics of the registration area alone is even more striking than table 13, based upon the whole United States.

Table 15; death-rate per 100,000 population of each race, from consumption and pneumonia.

Disease.	Whites.	Negroes.	Indians.	Chinese.	Japanese.
Consumption.....	173.5	485.4	506.8	656.8	239.6
Pneumonia.....	184.8	355.3	228.4	282.1	59.9

Why should the colored, the Chinese, the Indians, and the Japanese be more subject to consumption than the whites? Possibly because these races are inherently less able to throw off the disease when once it seeks to gain a foot-hold, this inherent inability being possibly due to an inherited defective immunity. Undoubtedly the real reason is to be found in the poverty and method of living of those other than whites. It is to the financial advantage of the commonwealth as a whole and of each tax-payer within it to safe-guard the health of the colored and yellow races by insisting upon hygienic housing and the prevention of over-crowding. If it is unlawful for an elevator to carry a number beyond that which may be carried with safety, why should it not also be unlawful for a house to lodge more than is permitted safely by its capacity? The method of housing of many of the poor Negroes and Chinese is not to be countenanced, for to a large extent the opportunity for the spread of pulmonary tuberculosis depends upon these races, especially in our large cities. Areas containing large numbers of colored people should demand that properly ventilated houses be furnished them at reasonable rates, as a measure for the good of the public health.

Nativity. In cities especially the influence of Europe is heavy upon us, and in rural districts that influence is not wholly wanting. The following table, showing such influence, is self-evident in itself alone.

Table 16; showing the percentage of deaths from consumption in five-year periods, among various nationalities represented in the United States. Computed from statistics furnished by the registration area for 1900.

	Under 5 yrs.	5-9 years.	10-14 years.	15-19 years.	20-24 years.	25-29 years.	30-34 years.	35-39 years.	40-44 years.	45-49 years.	50-54 years.	55-59 years.	60-64 years.	65-69 years.	Over 70 yrs.	Unknown.	Percentage living to be 70 or over.
Native whites.....	1.13	2.58	7.38	24.62	31.76	32.08	28.73	25.17	17.13	13.43	10.00	7.96	6.24	4.65	2.69	5.63	19.81
Canadians.....	1.25	2.89	8.06	29.27	36.51	36.09	31.39	23.59	19.65	13.11	12.22	9.24	7.07	4.45	3.05	7.94	8.28
English and Welsh.	1.06	3.93	6.89	18.87	29.93	28.52	24.79	20.83	14.89	15.28	10.21	8.58	5.07	5.39	2.06	3.12	23.36
Scotch.....	1.50	6.02	8.82	26.58	36.03	31.21	33.69	27.00	23.32	14.00	13.80	9.12	6.56	5.32	2.03	14.14	25.83
Irish	1.18	3.45	12.04	42.76	44.96	43.73	38.34	31.54	24.71	17.67	13.34	9.01	6.52	4.60	2.78	7.30	15.60
Scandinavians.....	1.41	4.33	8.06	28.88	33.77	37.33	33.99	28.86	26.95	19.78	16.05	12.38	12.66	4.57	3.08	8.33	6.92
Germans.....	1.06	1.80	8.76	24.85	29.31	34.28	31.37	26.05	21.10	15.06	11.90	9.06	5.86	4.35	2.33	10.26	19.05
French.....	1.99	5.00	.....	29.41	41.18	27.14	32.91	28.72	22.86	16.48	9.34	11.72	5.18	2.94	1.80	.....	21.46
Italians.....	0.95	3.29	13.24	31.71	25.77	20.56	19.81	13.91	10.54	14.34	7.73	4.15	8.94	1.82	2.17	.....	2.21
Hungarians	1.24	9.00	21.43	39.00	9.23	28.57	39.59	20.19	18.18	11.63	8.33	6.25	3.33	5.55	2.38	.....	2.90
Bohemians	0.63	.....	4.54	26.47	33.33	37.50	30.61	22.64	22.64	13.51	6.22	6.00	1.88	1.88	1.10	.....	7.78
Poles.....	0.32	2.22	5.13	21.88	23.73	19.62	23.42	14.28	10.42	19.75	7.04	6.45	5.41	11.76	2.04	.....	4.23
Russians.....	1.14	1.01	6.66	16.06	25.65	24.31	31.46	19.91	20.59	11.36	8.54	7.00	7.39	4.31	3.97	.....	3.25

The table illustrates several things: First relatively great susceptibility of the Irish, 45 deaths in every 100, between the ages of 20 and 24 years inclusive, being from consumption; secondly, the susceptibility of the Scandinavians, 37% of their number dying from that disease during the ages of 25 to 29 years inclusive; thirdly, the great susceptibility of the Bohemians, 53 out of every 100 deaths between the ages of 20 and 24 years inclusive being from consumption. The Irish are improvident, taking no thought for the morrow, excelling in poverty and bad housing. The Bohemians drink freely, especially in Chicago, and shut themselves up in their houses, carefully excluding the fresh air, the only thing they can have without paying for it. The Scandinavians literally work themselves to death, and many of them are guilty of neglecting the ventilation of their homes. The Italians, the happy-go-lucky people who spend their time out-of-doors grinding organs or selling bananas in the streets, show as low a percentage from consumption as any foreign nationality. The Poles and Russians are not particularly subject to consumption.

In the last column of table 16 is a statement of the percentage of each nationality living to the age of 70 years. The small percentage of Canadians living the allotted three score years and ten is noteworthy, as is also the longevity of the English, Scotch, Americans, and Germans. The small percentage of Scandinavians reaching 70 years is accounted for by their hard-work and general susceptibility to disease. Interesting is the fact that the Russian Hebrews, the Russians and other Slav races die prematurely early. There seems, however, to be no relation between tuberculosis and longevity, the Italians being fairly immune to consumption, and yet seldom living to the age of 70 years.

Occupation. The influence of occupation upon the incidence of consumption is illustrated by the following tables.

Table 17; showing by classes the proportion of deaths from consumption to the total number of deaths. Based upon the census of 1900.

Class (Registration Area Only.)	Per cent. Engaged.	Total Deaths.	Deaths Consumption.	Per cent. deaths from consumption.
Professional	3.6	10,123	1,353	13.36
Clerical and Official	7.6	13,703	2,777	20.26
Mercantile and Trading	8.9	16,239	2,335	14.38
Public Entertainment	1.6	4,343	643	14.81
Personal Service, Police and Military	2.7	5,071	954	18.81
Laboring and Servant	14.4	47,165	8,571	18.17
Manufacturing and Mechanical Industry	32.2	57,031	9,774	17.14
Agriculture, Transportation, and other out-door	27.4	123,015	13,782	11.20
Other Occupations	1.6	1,457	277	19.01
	100.0	278,147	40,466	14.55

The table demonstrates the fact that work predisposes to consumption, but it is not likely that a proper amount of work properly done in proper surroundings will predispose to tuberculosis. Occupations which take men out-of-doors show the smallest percentage of deaths from consumption, whereas indoor occupations such as clerical and official work give up one-fifth of their total deaths to consumption alone.

The following table is a detailed account of the sub-divisions in each class. Males only are included. The table is computed from figures in the census for 1900.

TABLE 18—Showing the Proportion of Deaths from Consumption to the Total Number of Deaths for Each Occupation.

OCCUPATIONS—MALES.	Total deaths	Deaths, consumption.	Percentage.	Deaths, consumption, per 100,000 workers of same class.
PROFESSIONAL:	10,123	1,353	13.36	182.2
Architects, artists, teachers of art	452	74	16.37	188.9
Clergymen	2,062	204	9.89	123.5
Engineers and surveyors	761	119	15.64	Not stated.
Journalists	375	57	14.67	188.4
Lawyers	1,508	153	10.15	139.9
Musicians and music teachers	597	132	22.11	349.8
Physicians and surgeons	2,322	216	9.30	168.8
School teachers	1,256	264	21.02	144.0
Others professional	790	134	16.96	Not stated.
CLERICAL AND OFFICIAL	13,703	2,777	20.26	304.2
Bookkeepers, clerks and copyists	7,824	2,175	27.80	308.0
Bankers, brokers and officials	1,711	131	7.65	92.1
Collectors, auctioneers and agents	2,595	283	10.91	131.2
Others of this class	1,573	188	11.95	Not stated.
MERCANTILE AND TRADING	16,239	2,335	14.38	165.8
Apothecaries, pharmacists, etc	800	154	19.25	305.5
Commercial travelers	585	67	11.45	Not stated.
Merchants and dealers	9,955	1,073	10.78	163.8
Hucksters and peddlers	919	185	20.13	250.9
Others of this class	3,980	856	21.51	Not stated.
PUBLIC ENTERTAINMENT	4,343	643	14.81	268.5
Hotel and boarding-house keepers	1,626	113	6.95	210.3
Saloon and restaurant keepers, bartenders, liquor dealers	2,717	530	19.51	285.6
PERSONAL SERVICE, POLICE AND MILITARY	5,071	954	18.81	234.8
Barbers and hair-dressers	1,371	401	29.25	334.9
Janitors and sextons	702	100	14.25	251.4
Policemen, watchmen and detectives	1,480	147	9.93	136.7
Soldiers, sailors and marines	737	88	11.94	Not stated.
Others of this class	731	218	29.82	"
LABORING AND SERVANT	47,165	8,571	18.17	376.8
Laborers (not agricultural)	44,206	7,736	17.50	370.7
Servants	2,959	835	28.22	430.3
MANUFACTURING AND MECHANICAL INDUSTRY	57,031	9,774	17.14	
Bakers and confectioners	1,072	213	19.87	262.1
Blacksmiths	3,386	358	10.57	250.1
Boot and shoe makers	2,348	311	13.25	212.9
Brewers, distillers and rectifiers	346	45	13.01	2135.5
Butchers	1,620	250	15.43	2856.8
Cabinet makers and upholsterers	1,016	176	17.32	5597.1
Carpenters and joiners	8,852	1,177	13.29	231.1
Cigar makers and tobacco workers	1,106	315	28.48	476.0
Clock and watch repairers, jewelers, etc	475	79	16.63	Not stated.
Compositors, printers and pressmen	1,451	494	33.84	435.9
Coopers	843	96	11.39	299.5
Engineers and firemen (not locomotive)	2,868	402	14.02	229.7
Glass blowers and glass workers	333	85	25.53	Not stated.
Hat and cap makers	263	57	21.67	"
Iron and steel workers	1,941	361	18.60	236.2
Leather makers	363	75	20.66	311.4
Leather workers	593	86	14.50	227.3
Machinists	2,718	483	17.77	195.9
Marble and stone cutters	736	241	32.74	540.5
Masons (brick and stone)	2,670	381	14.27	293.9
Mill and factory operatives (textile)	2,172	478	22.01	207.6
Millers (flour and grist)	687	72	10.48	198.5
Painters, glaziers and varnishers	3,641	684	18.78	319.3
Plasterers and whitewashers	535	93	17.38	Not stated.
Plumbers and gas and steam fitters	833	233	27.97	294.0
Tailors	2,143	377	17.59	218.2
Tinners and tinware makers	706	129	18.27	365.3
Others of this class	11,314	2,026	17.91	Not stated.
AGRICULTURE, TRANSPORTATION AND OTHER OUT-OF-DOOR	123,015	18,782	11.20	147.2
Boatmen and canal men	230	31	13.48	256.8
Draymen, hackmen, teamsters, etc	4,953	947	19.12	261.4
Farmers, planters and farm laborers	96,592	10,310	10.78	111.7
Gardeners, florists, nurserymen and vine growers	1,378	132	9.65	186.6
Livery stable keepers and hostlers	902	168	18.63	267.5
Lumbermen and raftsmen	629	64	10.18	107.1
Miners and quarrymen	5,895	574	9.74	120.9
Sailors, pilots, fishermen and oystermen	2,867	395	13.78	333.0
Steam railroad employees	6,217	697	11.21	129.8
Stock raisers, herders and drovers	734	75	9.57	Not stated.
Others of this class	2,568	389	15.14	"
All other occupations	1,457	277	19.01	"

Table 19; showing the proportion of deaths from consumption to the total number of deaths, for each occupation in females. U. S. census reports:

	Total Deaths.	Deaths, Consumption.	Percentage to whole.	Deaths per 100,000
All occupations	45,491	9,948	21.89	172.8
Musicians and teachers of music	279	87	31.18	Not stated
School teachers	1,880	532	28.15	126.1
Stenographers and type-writers	248	84	33.87	Not stated
Bookkeepers, clerks and copyists	788	265	33.63	198.0
Hotel and boarding house keepers	522	28	5.36	Not stated
Laundresses	2,398	522	21.77	94.4
Nurses and Midwives	1,330	177	13.31	100.2
Servants	17,484	3,669	20.98	319.7
Artificial flower and paper-box makers	26	11	42.31	Not stated
Cigar makers and tobacco workers	163	55	33.74	Not stated
Mill and factory operators (textile)	1,138	356	31.28	144.1
Milliners	461	115	24.95	Not stated
Dres-makers and seamstresses	2,965	787	26.54	130.1
Telegraph and telephone operators	81	31	38.27	205.1
All other occupations	15,718	3,229	20.54	Not stated

The effect of occupation upon the incidence of consumption is clearly seen in tables 18 and 19. Occupations confining workmen cause more cases to develop than do out-of-door occupations. The effects of confinement associated with posture is seen in the large proportion of deaths by consumption in cigarmakers and tobacco workers. Compositors, printers and pressmen work in poorly ventilated lofts very frequently, and are noted, unfortunately, for intemperance. Bad air and bad whisky are excellent aids for consumption. Glass blowers and glass workmen in this country, and pottery makers in England are prone to consumption because of the effect of sudden changes of temperature and of very high temperatures upon lung-tissue, this being weakened so much that the germs of consumption may enter. Marble and stone cutters are exposed to stone dust and suffer severely. Recently a stone cutter, now dead of consumption, told me that of all his former fellow workmen, he was the sole survivor, the others all having died in their later years of consumption. On the other hand miners of coal and quarrymen do not suffer from consumption, the explanation being that they are picked men breathing sterile dust. As a practical suggestion, each working man or woman should examine the tables of occupation here collaborated, and learn the amount of possible risk from consumption. A knowledge of one's position with reference to danger is of prime importance. Study of the tables demonstrates that trades permitting the breathing of plenty of pure, fresh air, such as farming, show the very lowest death-rates. The individuals with weak lungs should therefore turn to farming and stock-raising as their life-occupation.

Climate. The popular idea that cold weather favors consumption and that warm weather favors the patient is true in a limited sense only. The following table shows the death-rate from consumption for the whole United States during 1900 for each month of the year, and for Chicago, during the years 1902 and 1903.

Table 20; monthly death-rate from consumption for 1900 in the United States, and for 1902 and 1903 in Chicago.

United States, 1900.	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
United States, 1900—												
Total Deaths	80,912	89,757	107,490	104,618	98,730	60,453	82,472	86,030	79,280	77,738	72,086	79,510
Deaths, consumption	9,536	9,478	11,460	11,349	11,683	7,730	8,255	7,894	7,674	8,011	7,897	8,685
Percentage due to consumption	10.59	10.56	10.61	10.85	11.83	11.13	10.01	9.18	9.68	10.30	10.95	10.92
Chicago, 1902—												
Total Deaths	2,229	2,290	2,363	2,272	2,129	1,963	2,279	2,328	2,084	1,964	2,007	2,697
Deaths, consumption	250	198	240	247	225	220	199	180	206	185	185	250
Percentage due to consumption	11.19	8.88	10.11	9.55	10.57	11.21	8.73	7.73	9.88	10.18	8.90	9.05
Chicago, 1903—												
Total Deaths	2,573	2,570	2,713	2,628	2,675	2,042	2,390	2,255	2,067	1,962	2,124	2,354
Deaths, consumption	253	252	280	283	264	239	221	227	209	221	192	228
Percentage due to consumption	9.83	9.81	10.32	10.77	9.88	11.70	9.25	10.07	10.11	11.26	9.04	9.69

Table 21: mortality from consumption by months in Illinois.

Date.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1902	619	676	672	653	692	584	544	542	522	523	479	499
1903	642	626	696	641	634	579	553	529	504	*564	507	551

From these tables it may be inferred that in the whole United States May marks both the largest number of deaths and the maximum percentage of deaths due to consumption, indicating that winter and spring have proved too severe for the consumptive to long survive. In the Illinois statistics, table 21, the maximum number of deaths from consumption, taking both 1902 and 1903 together, falls in March, a very trying month in this state, and one which wealthy consumptives usually try to avoid by going south. In Chicago the maximum percentage of deaths for both 1902 and 1903 was in June, though the maximum number of deaths occurred in January for 1902, and in April for 1903. These statistics suggest that respiratory troubles are aggravated by the spring months, and that consumption is especially aggravated; secondly, that improper and inefficient ventilation during the winter because of the expense involved in heating fresh air is responsible for a very large part of the increased death-rate. In warm weather there is no benefit to the consumptive other than that obtained by the open ventilation of summer; and the low mortality from consumption in the fall months is due to the lasting benefit of the summer ventilation. It is the ventilation which is paramount. One of the monumental popular errors concerning consumption is that the patient cannot recover at home; that he must go to a warmer climate than ours. Yet, as a matter of fact, well-known to physicians, the organisms of consumption and their wicked assistants, the abscess-forming germs, flourish best in warm climates and least well in cold ones. This fact is directly substantiated by statistics from our own state, kindly furnished by the Illinois State Board of Health.

Table 22. Death-rate in Illinois by Sections, and the percentage of deaths from consumption.

	Rate per 1,000 All Causes.	Percentage due to Consumption.
1902.		
Northern section	12.54	10.85
*Northern section	10.32	9.61
Cook Co	13.84	11.39
Central section	11.33	11.74
Southern section	11.96	12.50
1903.		
Northern section	12.96	11.18
*Northern section	8.93	9.51
Cook Co	14.61	11.85
Central section	10.02	12.21
Southern section	10.27	12.17

*Cook County excluded.

It will be noted that the southern section of the state, the warmest portion, shows out-

side of Cook county, the highest death-rate from consumption.

Table 23. Death-rates from consumption in adjoining states. Compiled from U. S. census, 1900.

State.	Population.	Total Deaths.	Death rate per 1000.	Deaths Consumption.	Deaths per 100,000 population.
Michigan.....	2,420,982	33,572	13.43	2,438	101
Wisconsin....	2,069,042	24,928	12.05	2,350	114
Illinois.....	4,821,550	61,229	12.70	6,786	141
Indiana.....	2,516,462	33,586	13.35	4,232	168

The states to the north, Michigan and Wisconsin show fewer deaths from consumption in proportion to population than are shown by Illinois and Indiana which are situated further south. Fault cannot be found with these statistics, since Michigan is one of the registration states; and any error in the other three states would doubtless correct itself by reason of the fact that it would prevail equally in all three states and thus neutralize itself.

Bovine Tuberculosis. Careful study of D. E. Salmon's reports on Bovine Tuberculosis and public Health (Bulletin No. 53, Bureau of Animal Industry, U. S. Department of Agriculture) will convince one of some degree of relationship between bovine tuberculosis and tuberculosis in children. As a rule the germs of consumption, when swallowed in milk, pierce the walls of the intestine and attack the intestinal glands, causing what is popularly known as consumption of the bowels, and among physicians as tabes mesenterica. Not infrequently, however, germs taken into the mouth in food pierce the tonsils, spread down the glands of the neck into the chest along the wind-pipe, and from that point easily reach the lungs. Contaminated milk may, therefore, cause either consumption of the bowels, which is more usual, or consumption of the lungs which is more rare.

In American cattle, consumption is apparently increasing, with the increasing tendency to stable cattle near large cities. In England it is estimated that 30% of the cattle are infected; in the United States it is thought that as yet only 2% are infected.*

In Prussia the slaughterhouse statistics show 14.6 per cent of the cattle to be tuberculous; in Saxony the percentage is 29.13%. Of 20,850 cattle in Belgium tested for tuberculosis 48.88% showed it to be present; and of 25,459 so tested in Denmark, 49.3% showed it present.

In the light of these facts, if cow's milk can affect children, we should expect the very young children of England and the continent to show more consumption of the bowels than the babies of the United States. In this connection the following table is of interest.

Table 24. Showing the Prevalence of Intestinal Tuberculosis (tabes mesenterica) in children under 1 year in various places. From Bulletin 53 Bureau of Animal Industry.

	England and Wales, 1898.	Scotland, 1898.	London, 1898.	Berlin, 1898.	Paris, 1897.	New York City, 1899.	Boston, 1900.	Chicago, 1897 and 1898.
Deaths from intestinal tuberculosis.....	3,395	239	602	4	4	34	2	3
Deaths from all forms of tuberculosis.....	7,062	788	1,382	141	242	492	76	184
Proportion of former to latter in percentage.....	48.23	30.33	43.56	2.84	1.65	6.91	2.63	1.63

This table means that Great Britain with 30% of its cattle tuberculous, shows a per-

*Of 4,841,166 cattle slaughtered in the year 1900 under federal inspection, but 5,279, or 0.11 per cent were sufficiently affected to cause the condemnation of any part of the carcass. Bulletin No. 53, p. 7.

centage of intestinal tuberculosis compared with all forms ranging from 30% to 46%, whereas in Berlin, Paris, New York, Boston and Chicago, where inspection of milk is carefully made only 1.63% to 6.91% of infantile tuberculosis is primarily intestinal, presumably from contaminated milk. This table is a brilliant reply to those who decry the value of intelligent milk inspection.

Although the evidence just offered is circumstantial it is none the less valuable, and multiplication of such statistics is hardly necessary. It is worth while, however, to state that numerous cases are on record of the accidental inoculation of adults who have made post mortem examinations of tuberculosis in cattle; and instances of the infection of cattle by sputum from individuals suffering from consumption are very numerous. A disease which is found in cattle, hogs, sheep, horses, cats, dogs, rabbits, guinea pigs, monkeys, gorillas, and even lions in captivity, undoubtedly is able to affect human beings as well. Certainly any other germ known to cause disease in a wide range of animals, uniformly causes disease in man also. The simple conclusion is that inspection of cattle and milk and milk-sterilization is absolutely essential, if our Chicago and our Illinois statistics are to remain at their present low level in infantile tuberculosis.

Urban and Rural Tuberculosis. The variation in death-rate from consumption in cities and in rural districts is very large, especially when all towns or cities over 5,000 are classed as urban instead of rural.

Table 25. Rural and Urban Death-rate for all forms of tuberculosis in Illinois, 1903. (Figures kindly furnished by the State Board of Health.)

	Population.	Total Deaths.	Deaths per 100,000 population.
Chicago	1,885,000	3,377	179
51 other Illinois cities	459,480	879	191
Rural districts and small towns	2,783,099	2,770	99
Total	5,127,579	7,026	137

The death-rate from consumption and other forms of tuberculosis in cities is double or almost double what it is in rural districts. The small death-rate for the whole United States from consumption is due to the fact that 51,002,376 of our population is rural, only 24,992,199 being urban.

Why should urban districts show almost double the deaths shown in rural districts? The answer is that crowding, poverty, dissipation, smoke and lack of fresh air are the great aids to consumption. This is proved by a consideration of the 2,591 deaths from tuberculosis which took place in Chicago between July 1, 1903 and April 1, 1904. I went to the city records in Chicago and transcribed upon cards the name, age, social condition, residence, date of death, and cause in each case dying from tuberculosis. These I platted upon a city map, and I find that they fall into five huge groups: first, the colored belt, extending from Sixteenth St. to Fifty-first, between State St. and the Rock Island tracks, this district having sent 119 to their graves in nine months; secondly, the Bohemian district, west of Halsted and between Fourteenth and Twenty-second Sts., this district furnishing 211 deaths in nine months; thirdly, the Hull House district, west of the river to Ashland Avenue, and between Jackson Boulevard and West Fourteenth St., this district having sent 161 to the cemeteries in nine months; fourthly, the North Side River district, between Wells St. and the river, and North Avenue and the river, furnishing 118 deaths in nine months; fifthly, the Milwaukee Avenue district, between Kinzie and Robey Sts., North Avenue and the river, this district furnishing 194 deaths in nine months.

These figures are more striking by contrast. Thus in the narrow belt two blocks wide, between State St. and the Rock Island tracks extending south from Sixteenth St. to Fifty-first St. more people died of tuberculosis than in all the territory between State St. and Lake Michigan, Sixteenth and Fifty-first Sts., a district seven times as large. Similarly on the North Side, there were 118 deaths from consumption west of Wells St. and south of North Avenue, whereas east of Wells St. and south of North Avenue there were only 50 deaths, 28 of these taking place

south of Chicago Avenue in a densely populated rooming district.

An analysis of the districts showing the maximum tuberculosis reveals many possible causal factors. Race, poverty, smoke, dissipation, and bad-housing are responsible for the deaths in the colored belt. In the Bohemian district the houses are as a rule detached and are reasonably hygienic, but most Bohemians cannot be persuaded that ventilation is an absolute necessity. The Hull House district has been so much discussed that comment is unnecessary. The nativity of the inhabitants, their bad-housing and overcrowding, the poor ventilation of sleeping rooms and the smoke are responsible for numerous cases. In the North Side district Gault Court in the half-mile between Chicago Avenue and Division St. showed 10 deaths in nine months, the inhabitants being largely foreigners, Italians, Germans, Swedes and Irish, living crowded together with inadequate ventilation. This short street in nine months sent as many to their graves because of consumption as Hardin and Henderson counties, with their 18,636 inhabitants sent in the whole year of 1903.

In looking over the city map it is also evident that the areas of maximum tuberculosis are the areas of maximum smoke. The gases liberated from burning soft coal, containing large amounts of sulphur and soot are inhaled day after day and night after night. In time their action upon the lungs proves so deleterious that consumption soon gains a foot-hold. Where trees cannot live human beings struggle on in an unequal conflict, ultimately perishing. The cost to the commonwealth of an uncontrolled smoke-nuisance is measured by larger figures than mere damage to paint and fabrics, or mere interference with artistic sensibilities. Smoke murders.

Very important is the fact that consumption is spread by contact. Thus in the last nine months 56 houses furnished two or more deaths from tuberculosis. If researches were to be carried back ten years the number of houses furnishing two or more deaths from that disease would be immensely increased. Thus at 2110 Armour Ave. P. B., age 24, died Oct. 23, 1903, A. D. having died in the same house, aged 23, Aug. 7, 1903. At 2112 Armour ave. W. T., aged 23, died Nov. 17, 1903, E. G., aged 35, having died Sept. 15, 1903. And 54 other similar instances can be recorded! Think what a hot-bed of consumption Armour Ave. must be, with a record of 47 deaths in nine months, more deaths than Menard, Mercer and Monroe counties, with their 50,513 inhabitants furnished in the whole twelve months of 1903. South State St. is worse than Armour Ave. 70 having died of consumption in nine months.

Table 26. Streets in Chicago furnishing ten or more deaths from tuberculosis in nine months.

Street.	No.	Street.	No.
Armour avenue	47	Lowe avenue	15
Ashland avenue	26	Loomis street	14
Aberdeen street	11	Milwaukee avenue	11
Adams street	10	Mohawk street	12
Archer avenue	10	Morgan street	19
Blue Island avenue	13	Madison street	30
Clark street	50	North avenue	16
Chicago avenue	16	Ohio street	13
Clybourn avenue	19	Polk street	14
Center avenue	15	Paulina street	18
Cottage Grove av'nue	10	Princeton avenue	15
Dearborn street	40	Peoria street	10
Division street	18	Randolph street	15
Emerald avenue	18	Seventeenth street	13
Erie street	20	South State street	70
Eighteenth street	19	Sedgwick street	13
Eighteenth place	11	Sangamon street	16
Fifth avenue	15	Taylor street	15
Fourteenth street	15	Throop street	15
Gault court	10	Twentieth street	17
Green street	10	Twenty-second street	10
Harrison street	10	Union avenue	10
Halsted street	36	Van Buren street	11
Hermitage avenue	11	Wabash avenue	34
Huron street	16	Washington boulev'd	11
Jefferson street	13	Western avenue	13
Lake street	20	Wallace street	12
LaSalle street	23	Wentworth avenue	12
Lincoln street	17	Wells street	10
Laflin street	10		

All Chicagoans will readily recognize every street in the above table, all of them being located in the more densely settled and poorer neighborhoods. An apparent exception like Washington Boulevard is readily explained when it is stated that practically every death upon it occurred east of Aberdeen St. In all cases where a street varies in its inhabitants and their manner of housing, it will be found that the deaths from consumption are massed in the bad portions of the street. It cannot be objected that many of these streets show large numbers of deaths because of their colored residents, only two of them

being thus accounted for, namely Armour Ave. and Dearborn St. Indeed in Chicago, contrary to general opinion, the colored race does not essentially modify the death-rate.

Table 27. Classified Population of Chicago for 1900, with Death-rate.

Class.	Percentage of population.	Death rate.	Deaths.	Deaths Consumption.	Per cent.
White	98.1	16.1	26,854	2,865	10.67
Native	63.7	15 8	.....	.....	.....
Foreign	34.4	16.6	.....	.....	.....
Colored	1.9	21.6	679	169	24.89

Less than 2% of the population of Chicago is colored. The percentage of deaths in Chicago from tuberculosis compared with deaths from all causes is for combined races, 11.02% as against 10.67% for whites alone. The following table shows the conditions in important cities for 1900 and 1903.

Table 28. Ratio of deaths from tuberculosis to deaths from all causes in Illinois cities.

	1900.	1903.*
Aurora	8.01%	10.06%
Belleville	10.04%	9.80%
Danville	11.54%	9.83%
Decatur	12.11%	8.45%
Galesburg	10.37%	10.13%
Jacksonville	11.55%	10 87%
Ottawa	10.67%	9.33%
Quincy	11.51%	10.68%
Springfield	11.37%	12.23%

*Figures kindly furnished by the Illinois State Board of Health.

The improvement in urban tuberculosis as shown in the above table is very gratifying, and the improvement is shown equally well in Chicago.

Table 29. Consumption in Chicago.

Year.	Total Deaths, Consumption.	Deaths from Consumption per 1000 of population.
1892	2,177	17.84
1893	2,315	18.10
1894	2,155	16.09
1895	2,169	15.58
1896	2,310	15.33
1897	2,180	14.35
1898	2,416	15.20
1899	2,516	15.35
1900	2,599	15.30
1901	2,495	14.19
1902	2,556	14.04
1903	2,809	15.22

In Chicago the lowered death-rate is due in part to the trolley-car which has done more to spread the population than any one factor. The policy of the street-car companies in carrying a passenger any distance for five cents has vastly aided in reducing density of population, and the speed of the trolley-cars has brought distant and wholesome localities within a short-time-distance from the place of work.

It may be suggested that local boards of health should see to it that houses are properly constructed for efficient ventilation, that overcrowding be prevented, that the smoke-nuisance be done away with, that poverty be alleviated by finding suitable employment for the unemployed, and that inspection of the premises with disinfection should be carried out after every death certified from consumption. I believe most strongly that tuberculosis is "caught," not so readily as measles and scarlet fever, but just as surely. In Chicago within nine months time 56 houses reported double deaths, and not one house was disinfected! Why should houses be permitted to become the repositories of countless germs of consumption? Why is it not just as imperative for city boards to disinfect after consumption as after smallpox? Medical men are beginning to abandon the old fetich of heredity. Inheritance does not play the part once supposed. Consumption is acquired by actual contact, not by inheritance of a predisposition towards the disease. A brother contracts the disease and soon his sister at home has it. A husband acquires the disease, and later the wife, too, dies of it. Up to within one month a leading insurance company of the United States had upon its blanks this question: "Have any of your uncles and aunts ever died of consumption?" This question has been replaced by two others: "Is any person in your immediate household now ill with consumption? Or has anyone of them recently died of that disease?" Intimate association with a consumptive is the paramount factor. I am personally willing boldly to deny the claim that there is an inherited predisposition toward tuberculosis in certain individuals, and I

believe that such denial will be universally made at some future date; because experience is showing that an individual with consumption is assisted by nature to a partial recovery spontaneously, possibly as in other bacterial diseases, by the formation of some natural antidote or bactericide within his blood; and is further showing that the offspring of a tuberculous mother show more natural resistance to tuberculosis than the offspring of a mother not so diseased. Let us get emancipated from the old and fatal error that it is no use; that the patient must die because he has inherited the disease or a tendency toward it; and let us gain time for vigorous and early treatment. And above all let us disinfect homes after the death of the poor unfortunates, so that the surviving friends and relatives may not later perish, too, and by their death continue the old fallacy that tuberculosis is inherited in fact or in tendency. Let us have no such notorious curse in Chicago as the "lung-block" of New York City into which healthy individuals move and in a few months are carried away to a consumptive's grave. Germs live two years in dark sunless halls and rooms, and in twenty minutes they can be thoroughly killed by disinfection. I venture to predict a fall of 25% to 50% in our death-rate from consumption within ten years after the introduction of disinfection in Chicago and our Illinois towns.

Tuberculosis and consumption in the counties of Illinois show remarkable variations. Thus Hardin County showed 23.84% of the total deaths for 1902 to have been from tuberculosis, and only 9.72% in 1903. The conditions are shown in detail in the following table collated from statistics prepared by the Illinois State Board of Health.

TABLE 30.—Tuberculosis, by Counties, in Illinois, for 1902 and 1903.

COUNTY.	1902.					1903.					Per cent of tuberculosis to all deaths, both years
	Population	Total deaths from all causes	Deaths from consumption	Deaths from other forms	Per cent of tuberculosis to all deaths	Population	Total deaths from all causes	Deaths from consumption	Deaths from other forms	Per cent of tuberculosis to all deaths	
Adams	68,092	985	100	21	12.28	68,609	939	90	14	11.07	11.69
Alexander	19,948	347	48	2	14.36	20,230	289	48	4	17.99	16.04
Bond	16,383	156	15	.....	9.61	16,536	145	11	3	9.62	9.63
Boone	16,509	173	12	3	8.67	16,867	156	17	3	12.82	10.64
Browr	11,161	95	7	.....	7.36	11,122	105	17	2	18.09	12.90
Bureau	42,331	497	29	4	6.64	42,941	387	21	2	5.94	6.33
Calhoun	9,170	97	9	.....	9.28	9,297	81	7	.....	8.64	8.99
Carroll	19,092	184	18	2	10.86	19,156	202	8	1	4.45	7.51
Cass	17,474	178	21	1	12.36	17,600	160	19	2	13.12	12.72
Champaign	48,715	528	44	9	10.04	49,261	467	33	7	8.78	9.45
Christian	33,225	315	21	5	8.22	33,443	309	26	5	10.03	9.13
Clark	24,416	313	61	9	22.36	24,673	202	26	6	15.84	19.81
Clay	20,109	183	22	6	15.30	20,387	107	11	1	11.21	13.79
Clinton	20,207	205	10	2	5.88	19,605	208	13	3	7.69	6.78
Coles	34,957	356	45	7	14.60	35,362	336	42	7	14.58	14.59
Cook	1,968,068	27,252	2,691	414	11.39	2,032,779	29,701	3,007	518	11.87	11.64
Crawford	19,631	276	41	7	17.39	19,827	212	26	5	14.62	16.19
Cumberland	16,260	204	27	3	14.71	16,328	147	12	3	10.20	12.82
DeKalb	32,694	310	24	3	5.71	33,163	308	29	3	10.39	9.55
DeWitt	19,368	193	14	3	8.81	19,570	172	12	2	8.14	8.49
Douglas	19,382	235	27	3	12.76	19,525	158	20	3	14.55	13.49
DuPage	29,325	291	16	5	7.22	29,890	322	16	4	6.21	6.69
Edgar	28,570	312	29	4	10.57	28,719	300	37	5	14.00	12.25
Edwards	10,525	106	12	1	12.17	10,615	93	12	2	15.05	13.57
Effingham	20,686	252	24	6	11.08	20,797	219	20	3	10.50	11.25
Fayette	28,804	299	41	3	14.71	29,174	253	29	4	13.04	13.95
Ford	18,624	133	7	2	6.77	18,756	126	11	.....	8.73	7.72
Franklin	20,182	295	35	.....	11.86	20,436	173	21	4	14.45	12.82
Fulton	46,819	461	38	6	9.54	47,128	413	35	9	10.65	10.07
Gallatin	16,016	208	26	5	14.90	16,106	160	20	1	13.12	14.13
Greene	23,013	266	30	2	12.03	22,974	224	22	4	11.60	11.84
Grundy	24,758	273	19	3	8.06	25,070	250	14	2	6.40	7.27
Hamilton	20,676	239	37	6	17.99	20,916	105	13	1	13.33	16.57
Hancock	32,276	359	22	3	6.96	32,308	302	30	4	14.21	10.29
Hardin	7,491	88	18	3	23.84	7,512	72	5	2	9.72	17.50
Henderson	11,028	83	3	.....	3.61	11,124	71	4	.....	5.63	4.55

TABLE 30—Tuberculosis in Illinois—*Concluded.*

COUNTY.	1902.					1903.					Per cent of tuberculosis to all deaths, both years
	Population	Total deaths from all causes	Deaths from consumption	Deaths from other forms	Per cent of tuberculosis to all deaths	Population	Total deaths from all causes	Deaths from consumption	Deaths from other forms	Per cent of tuberculosis to all deaths	
Henry	41,391	436	30	5	8.05	42,062	362	24	7	8.56	8.27
Iroquois	38,583	332	23	10	9.94	38,868	293	38	1	13.31	11.52
Jackson	35,083	299	24	2	8.69	35,600	285	28	2	10.53	9.59
Jasper	20,554	203	22	4	12.81	20,752	171	23		17.54	14.97
Jefferson	29,241	332	42		12.65	29,795	253	31	5	14.23	13.33
Jersey	14,414	169	12	2	8.29	14,394	161	22	1	14.28	11.21
JoDaviess	23,972	204	15	3	8.82	23,915	228	21	3	10.52	9.72
Johnson	15,798	145	21	1	15.17	15,863	130	15		11.51	13.45
Kane	81,538	733	53	17	9.55	82,911	1,087	82	23	9.65	9.62
Kankakee	38,838	557	58	10	12.21	39,681	500	53	4	9.66	10.80
Kendall	10,828	84	9	1	11.90	10,764	81	4		4.93	8.48
Knox	44,584	489	53	8	12.49	45,070	477	38	5	9.01	10.77
Lake	36,558	440	44	8	11.82	37,585	487	48	5	10.88	11.33
LaSalle	89,177	955	83	11	9.84	89,869	844	65	11	9.00	9.45
Lawrence	16,889	239	36	4	16.74	17,072	170	26	2	16.47	16.63
Lee	30,635	278	29	3	11.51	31,006	266	37	4	11.28	11.58
Livingston	42,751	371	33	2	9.43	43,109	326	31	4	10.73	10.04
Logan	29,318	411	35	3	9.24	29,637	329	62	11	22.19	15.00
Macon	45,187	514	51	12	12.26	45,779	483	39	7	9.52	10.93
Macoupin	42,631	461	34	5	8.46	42,819	447	50	3	11.85	10.13
Madison	67,326	883	56	10	7.4	68,641	802	64	10	9.23	8.31
Marion	31,767	407	46	5	1	32,277	338	44	4	14.20	13.29
Marshall	16,913	169	8	1	5	17,185	131	12		9.16	7.00
Mason	17,776	178	15	3	10.1	17,918	179	21	5	14.52	10.92
Massac	13,469	251	32	4	14.04	13,649	164	25	6	18.90	16.14
McDonough	28,601	302	40	6	15.23	28,696	246	28	3	12.19	14.05
McHenry	30,488	292	23	2	8.56	31,582	255	13	6	7.45	8.04
McLean	68,804	776	61	5	8.51	69,285	673	51	8	8.76	8.63
Menard	14,579	149	16	1	11.41	14,731	144	19	1	13.89	12.63
Mercer	21,425	211	22	4	12.32	21,665	166	15	2	10.24	11.41
Monroe	14,026	149	6	3	6.04	14,117	122	8		6.54	6.27
Montgomery	31,043	329	36	2	11.53	31,086	285	43	4	16.35	13.78
Morgan	35,480	542	61	7	12.56	35,717	517	57	9	12.76	12.65
Moultrie	15,373	154	15	2	11.04	15,447	142	17	3	14.08	12.50
Ogle	20,213	210	13		6.19	20,255	212	18	1	8.96	7.58
Peoria	92,254	1,093	98	9	10.06	94,077	1,122	108	10	10.51	10.30
Perry	20,290	276	23	3	9.42	20,520	223	15	4	8.52	9.02
Piatt	17,845	202	26	3	14.36	17,899	182	19		10.44	12.50
Pike	31,714	350	28	9	10.57	31,774	305	29	4	10.82	10.69
Pope	13,154	134	20	1	15.67	13,111	113	19	3	19.47	17.41
Pulaski	15,193	249	39	8	18.88	15,514	135	21	1	16.29	17.97
Putnam	4,748	51	2		3.92	4,750	48	3		6.25	5.05
Randolph	28,591	306	36	2	12.42	28,887	348	47	10	16.37	14.53
Richland	16,765	148	19		12.84	16,803	168	15		12.71	10.76
Rock Island	57,915	517	50	3	10.25	59,249	596	53	8	10.23	10.24
Saline	22,153	219	34	3	16.89	22,388	164	18	3	12.80	15.14
Sangamon	73,673	1,039	119	18	13.19	74,712	968	102	20	12.60	12.91
Schuyler	16,152	164	16	1	10.36	16,164	120	19	1	16.66	13.03
Scott	10,485	109	13	2	13.76	10,500	66	8		12.12	13.14
Shelby	32,313	282	29	7	12.41	32,407	271	35	2	13.65	13.20
Stark	10,227	99	3	2	5.05	10,247	94	8	3	11.59	8.29
St. Clair	90,708	1,005	105	11	11.54	92,719	1,495	131	9	9.36	10.24
Stephenson	35,652	391	24	2	6.65	36,012	384	23	4	7.55	7.03
Tazewell	33,954	280	30	3	11.79	34,321	347	35	3	10.95	11.32
Union	22,822	368	35	4	10.59	22,928	324	36	4	12.34	11.42
Vermilion	68,781	795	80	22	12.83	70,354	768	73	12	11.07	11.96
Wabash	12,726	157	18	5	14.65	12,798	123	14	4	14.63	14.64
Warren	23,539	243	23	2	10.29	23,728	243	23	6	11.93	11.11
Washington	19,579	218	28	5	15.14	19,605	187	18	1	10.16	12.84
Wayne	28,390	258	26	13	15.12	28,772	191	30	8	19.52	17.15
White	25,762	422	59	2	14.45	25,500	206	34	3	17.96	15.60
Whiteside	35,481	398	28		7.03	35,867	328	23	5	8.53	7.71
Will	77,315	887	91	15	11.96	78,591	858	79	11	10.48	11.23
Williamson	28,916	332	37	2	11.75	29,467	240	23	2	10.41	11.18
Winnebago	49,426	590	56	6	10.51	50,217	560	50	10	10.71	10.61
Woodford	21,901	191	16	2	9.42	21,940	187	12	3	8.02	8.73
Totals	5,018,646	61,144	6,021	884	11.27	5,127,579	61,037	6,081	980	11.54	11.41

An analysis of these counties fails to reveal any adequate cause for the great variation in the prevalence of consumption. Some facts stand out clearly, however. For example, Jackson, Williamson, Saline, Gallatin, Union, Johnson, Pope, Hardin, Alexander, Pulaski and Massac counties, all situated in the extreme southern part of the state, where railroads, good houses, and means of combating disease are poor, show 14.54% of all deaths from all causes to be due to tuberculosis alone. Interesting is the relation of tuberculosis to the river valleys of Illinois. Thus Winnebago, Ogle, Lee, Whiteside, and Rock Island counties, the counties of the Rock River valley, show only 9.54% of their deaths to be from tuberculosis. Grundy, Kendall, LaSalle, Bureau, Putnam, Marshall, Woodford and Peoria counties, in the upper Illinois valley, show only 7.83% of their deaths to be from tuberculosis. These counties are doubtless the most prosperous ones of the state, and prosperity keeps down consumption. Tazewell, Mason, Fulton, Schuyler, Brown, Cass, Morgan, Pike, Scott, Calhoun, Green, and Jersey counties show 11.62% of their total deaths to be from tuberculosis, these counties constituting the lower Illinois River valley. JoDaviess, Carroll, Whiteside, Rock Island, Mercer, Henderson, Hancock, Adams, and Pike counties, constituting the Mississippi Valley above St. Louis show a percentage of 9.38%; and St. Clair, Monroe, Randolph, Jackson, Union and Alexander counties, constituting the Mississippi Valley below St. Louis show 11.35% of their total deaths to be from consumption. Markedly contrasting with these are the statistics for the valley of the Wabash River. Clark, Crawford, Lawrence, Wabash, Edwards, White and Gallatin counties, of the valley of the Wabash, show 15.79% of all of their deaths to be from tuberculosis. The northern Illinois coal mining counties, La Salle, Grundy, Putnam, Bureau, and Marshall, show only 7.02% of their deaths to be from tuberculosis, the healthiest portion of the state. A state sanitarium might well be located in any one of these counties.

Some counties show high death rates from tuberculosis because of their colored inhabitants. Thus Alexander County with a percentage of deaths from tuberculosis compared with deaths from all causes as high as 17.99% for 1903, lost only 16 whites in its total of 48 deaths from consumption, the remaining 32 being colored. Randolph County with a percentage of 16.37% lost 33 whites and 14 colored. Yet the aggregate effect of the colored race upon the death-rate from consumption is small, only 2.61% of the inhabitants of Illinois being colored in 1900, and only 366 having died from consumption in Illinois in 1903 as against 5,715 whites.

In conclusion, a few additional suggestions for the prevention of consumption are in order. Tenement laws should be made and rigidly enforced, making inside bedrooms a crime. It is our business where our neighbor sleeps, as much in tuberculosis as in smallpox. It is our business how the landlord builds his houses, how many cubic feet of air he provides for each sleeper. It is our business to see that our neighbor's house is properly ventilated, to see that he spits in proper places if he must needs spit, and not upon the sidewalk or in public conveyances and places; that he does not dissipate his time away in tobacco-filled saloons till one o'clock in the morning (or later). Midnight closing is a hygienic measure. He must sleep; he must get air. We must have numerous small parks and many large parks. Our streets must be wide and our tenement-houses not above four stories in height, or better three. Solid blocks of houses should not be permitted, preventing, as they do even the mere filtering in of a few rays of doubtful sunshine through a pall of smoke. The smoke nuisance should be attacked with renewed vigor on a new and vastly important basis—the destruction of life which it entails. The poor should be helped. They should be shown how to keep their houses from becoming granaries of germs. Their blind alleys should be opened up for them. They should be taught that window curtains should be up, not down; that curtains which shut out sunshine, shut out health; that it is better for the furniture and carpets to fade than the children; that windows should

e opened at night, the night air being the very best air that we have; that dirty hands make dirty eating; that malnutrition favors the way for disease; that many dear foods have small food value and are not to be desired; that many cheap foods within their means, as peas and beans, have a high food-value; that loss of strength, a cold, and a few night sweats, mean that a physician's help is necessary, and an excellent physician may be found in every dispensary without cost. Those employing help must remember that living wages are the workingman's right: and that if he be married, he should receive more than if he is single. He must be given sufficient to clothe himself and his family; to feed himself, his wife, and children properly; to house them hygienically. He must not nor must any of his family be subjected to the terrible strain of overwork in the sweat-shop or elsewhere, as are so many of the foreign poor. He must keep out of saloons. The old idea that whisky prevents or cures consumption is a stupendous misconception. Alcohol is one of the most important of the predisposing causes. Whenever consumption takes hold of a family, the alcoholics are the very first to perish of it. Put no trust in patent medicines; they are a delusion and a snare. The patent medicine man is no physician, sitting up nights studying the subject of tuberculosis, endeavoring to find its favoring causes so that the people may avoid them; on the contrary he seeks to increase the number of cases by persuading you that you have something which you have not, so that you may buy a few bottles of alleged medicine for the sake of curing that which you do not have. Thus it is that poor people and foolish ministers of the gospel write testimonials which outrage their own innate common sense. There is one medicine and one cure; it is the breathing in of large doses of pure air, all day long and all night long.

Discussion of Tuberculosis Symposium.

Dr. J. W. Pettit, Ottawa: I am not in the habit of mapping out work for others without being willing to do my share or even more. If I can have the assistance of the profession of the State, I will attempt to make practical demonstration of the truths set forth in the symposium which has been presened. My plan is this: Secure a few cases of tuberculosis, say 20 or 30 and place them under the best possible conditions in a Tent Colony and thus make a practical demonstration to the people that what has been set forth by the several essayists is true. Otherwise it may be argued by the members of the Legislature that we are asking for a large appropriation for state sanatoria to demonstrate a mere theory. We must prove to the Legislature that our plan is thoroughly practical. If we do this there can hardly be a question as to our success in securing an appropriation. I wish to read a letter from Governor Yates showing the interest he takes in this matter.

My dear Doctor—I was pleased to learn a day or two ago from the State Board of Health, that you have made elaborate plans for the presentation of a practical symposium on pulmonary tuberculosis, at the next meeting of the Illinois State Medical Society, which will include statistical features confined to Illinois, regarding the prevalence, mortality and such other data in connection with the disease as may be found desirable, and that it is the intention of the State Medical Society to endeavor to stimulate an interest and arouse enthusiasm among the profession and the laity, which will lead to practical results.

For sometime past I have been greatly interested in the campaign which has been inaugurated by medical men against this disease, which, according to a resolution recently adopted by the Illinois State Board of Health, has been properly termed "the great white plague." Its ravages not only in Illinois but elsewhere throughout the country have caused me to realize that it is imperative that immediate steps be taken to do whatever is practicable to prevent its spread. What shall be done in this respect, you and your associates in the State Medical Society are more competent to determine than I.

As you are aware, I recommended the establishment of a sanatorium for consumptives in my message to the forty-third general assembly in January, 1903. I did this on the earnest recommendation of the State Board of Health? A bill providing for a sanatorium was introduced early in the session, but for some reason it received but little support from the medical profession. I trust that in 1905 the interest and enthusiasm which you seek will be manifested not only by the medical profession but by the entire people, and that some step will be taken to at least limit the ravages of this disease which medical science teaches us is preventable.

It will afford me much gratification to be of assistance to the State Medical Society in its laudable undertaking.

Very truly yours,

(Signed) Richard Yates.

Dr. J. W. Pettit
Chairman Section One,
Illinois State Medical Society,
Ottawa, Illinois.

If the crusade against tuberculosis which has been inaugurated at this meeting of the Illinois State Medical Society should prove a failure, it will be because it has been improperly managed or because its importance is not appreciated. With a united profession assisted by 800 newspapers in this State, who have pledged their support, it cannot be a failure. I have no doubt that if a committee appointed by this Society will work faithfully until the next meeting of the Legislature, there will be no difficulty in securing an appropriation of any reasonable sum that may be needed to build state sanatoria which seems to be the first step necessary to be taken in this great work. I am fully persuaded that all that is necessary to secure the active support of the public is to get the facts before the people. This is the duty which at present confronts the Illinois State Medical Society.

Let me say also in this connection that from today for the next ten days the papers of the State of Illinois will be full of the facts set forth in this symposium today. I had addressed to every secular publication of whatever kind and character in all languages, published in the confines of this State, about eleven hundred of them in all, a letter apprising them of what we were going to do here today. Eight hundred of these papers responded and said that they were willing to do everything in their power to assist in this work. Let me say to you, gentlemen, and I say it to your shame, that I have addressed numerous communications to the medical profession of the State, but I never got anything like so large a percentage of responses, even when it was a matter that interested the medical profession directly.

The press of this city did not know who I was. They only knew that I represented the Illinois State Medical Society, and they were ready to take on faith, without raising a single question, all I gave them. It is a remarkable exhibition of the generosity of the press. Within the next ten days the public will receive more reliable information on this subject than they would have had in seventeen years if they had to depend on the medical profession and on the medical journals. We are going to make a legitimate use of the press in the dissemination of this knowledge.

I have no doubt that if a committee is appointed by this Society that it will go to work and work faithfully until the next meeting of the legislature; that there will be no difficulty in getting an appropriation of any sum that may be needed, even $250,000.00 from the legislature for this work.

If the people and the legislators and newspapers of the State have not done their duty in this matter, whose fault is it? It is the fault of the medical profession in not giving them the necessary information.

General Dickey, Bloomington: I heartily agree with all that has been said, and I realize as well as anybody the necessity of acting in good faith and at once in attempting to get rid of this awful calamity that we have in this State as well as in the United States. I believe that if we go about it in the proper way, and if every member of the Illinois State Medical Society takes it upon himself to see personally, and to impress on every legislator in the State the importance of the passage of such an appropriation, and not wait until the last minute, when the legislature is in session, you will get all you want. Begin early and remind him often. See your legislators personally, and have every one in the State properly instructed and informed upon the necessity of an appropriation, then when the time comes have the proper committee from this Society appear at Springfield, and you can, without doubt, get the safe passage of this bill and as much of an appropriation as you may need. See the legislator with whom you are acquainted personally, and you will succeed.

Dr. Thos. W. Bath, Bloomington: A few days ago this city passed an ordinance against public spitting. Every city in the State ought to do the same thing, because it is, at least, a beginning. I think we are a little topheavy trying to get the legislature to establish sanatoria, but we can do a great deal locally by educating the public as to the dangers of promiscuous spitting. It has occurred to me that it is useless for doctors to get up in general sessions and discuss among themselves these threadbare subjects that can be read about in all textbooks. The laity, the ones who are concerned the most, do not enter into these discussions; they know nothing about them, and they never will hear anything about what we are saying and what we want them to do.

We ought to lay aside all professional jealousies in this matter, and when the yearly program of the local societies is made up, let the proper officers confer with Dr. A., B. and C., irrespective of any personal feeling, and map out a line of action that will be productive of some good all around.

We should educate the public both by precept and by example. But lay aside professional jealousies; do not imagine that one man is trying to do more than another to get before the people. Let them get up their scientific articles for the education of the people. Many of the laymen in this community know more about the microscope, and science, and tuberculosis than the doctors, and it will not be a very difficult matter to interest the people in such a movement as we are now endeavoring to launch. Interest the general public in this movement, it is inaugurated for their benefit, and they will go to Springfield and say that so and so must be done, and it will be done.

That can only be done by our letting the public know that we are interested in their welfare and not in our own. Let them see that we are really concerned about them; be public spirited, and then let the public take care of the legislators. They can do it better than we can, because the people are the government, and the government is the people.

Dr. J. A. Egan, Springfield: I regret exceedingly that I was unable to be present at the reading of the papers before the symposium

this morning, and that I am not in a position to intelligently discuss them.

As a physician, a sanitarian and a health officer, I am naturally interested in the subject of the Cause and Prevention of Tuberculosis. It has been the reproach of this State for sometime past that nothing has been done for the consumptives. I think that the whole profession is agreed that something should be done at once, and that the solution of the problem lies in the establishment of sanatoria—not in Colorado or Arizona—but in Illinois. There are many sites in this state which can be used to advantage in the establishment of Camps or Colonies for the housing of consumptives, and I believe that it is the concensus of medical opinion that consumption can be cured in Illinois.

Dr. Pettit referred to an appropriation for a consumptive sanatorium and mentioned the amount which he thought might be appropriated. I think that the Legislature, if it gives an appropriation at all, will give a large one, providing the members are convinced that the sanatorium is a necessity. Once convinced they will give their consent for its construction and maintenance.

Bills for the erection and maintenance of a consumptive sanatorium and an epileptic colony were introduced in the last Legislature, but receiving little support they failed to become laws. However, the epileptic colony bill passed the house, carrying an appropriation of $100,000. In connection with these bills, a member of the House of Representatives made a remark to me, which may be of interest. He said: It is impossible for the medical profession to get an appropriation for an epileptic colony and one for a consumptive colony in the same session.

Believing that this remark voiced the sentiments of many members of the House of Representatives, the State Board of Health thereafter paid but little attention to the consumptive bill, but used its influence to further the passage of the epileptic colony bill. As stated, this bill passed the House but unfortunately reached the Senate but a day or two before adjournment when nothing could be done.

Illinois should, and I believe can, have a sanatorium for consumptives. If the members of the medical profession will use their influence in this direction, there is little doubt but that the next session of the Legislature will be able to obtain a good appropriation for the establishment of a sanatorium.

Rules for Patients of the Henry Phipps Institute for the Study, Treatment and Prevention of Tuberculosis

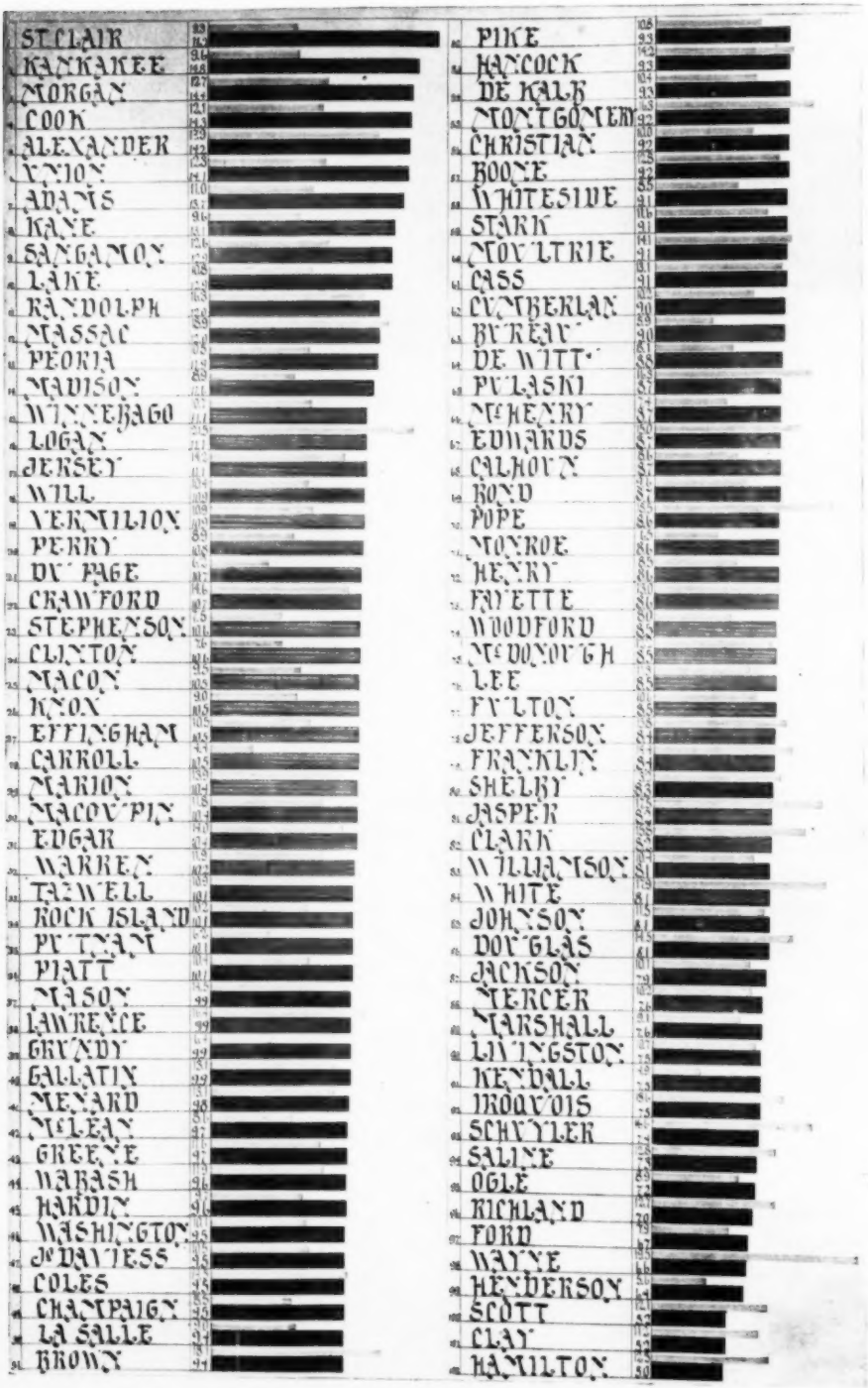
1. Don't spit on the pavement, on the street, nor into any place where you cannot destroy the germs which you spit up.
2. Do not swallow any spit which comes up from your lungs or which comes out of the back part of your throat.
3. Spit into a spit cup when it is possible to do so.
4. Always use a spit cup with a handle to it so that you can hold it close to your mouth.
5. When you use a china or earthenware spit cup, always keep lye and water in it and scald out the spit cup once or twice a day with boiling water.
6. When you use a tin spit cup with a paper spit cup inside burn the paper cup at least once a day and scald the tin cup with boiling water.
7. Never use a handkerchief or a rag or any material other than paper to spit in or to wipe your mouth with.
8. When you cannot spit into a spit cup, spit into a paper napkin.
9. Always use a paper napkin to wipe your mouth with, after spitting, and be careful not to soil your hands.
10. Always carry a cheap paper bag in your pocket or caba to put paper napkins in which you have used.
11. When you have used a paper napkin, either to spit in or to wipe your mouth with, fold it up carefully and put it away in a paper bag.
12. Every evening, before going to bed, burn your paper bag together with the napkins which you have deposited in it.
13. Do not let any spit get on your clothing, or your lips and hands, or your bed clothes or carpets or furniture, or on anything about you, wherever you may be.
14. If, by any accident, any spit should be deposited anywhere else than in your spit cup or in your paper napkin, take pains at once to destroy it, either by taking it up and putting it in the fire or by putting lye and water on it.
15. If you have a moustache or beard shave it off or crop it close.
16. Always wash your lips and hands before eating or drinking, and rinse out your mouth.
17. If you have a running sore take up the matter which is given off with absorbent cotton and burn it.
18. Avoid handshaking and kissing. These customs are dangerous to you as well as to others. They may give others consumption; they may bring you colds and influenzas which will greatly aggravate your disease and may prevent your recovery.
19. Do not cough if you can help it. You can control your cough to a great extent by will power. When you cough severely hold a paper napkin to your mouth so as not to throw out spit while coughing.
20. Sit out of doors all you can. If you have no other place to sit than the pavement sit on the pavement in front of your house.
21. Don't take any exercise except upon the advice of your doctor.
22. Always sleep with your windows open, no difference what the weather may be.
23. Avoid fatigue. One single fatigue may change the course of your disease from a favorable one to an unfavorable one.
24. Go to bed early. If you are working, lie down when you have a few moments to spare.
25. Don't take any medicine unless it has been prescribed by your physician. Medicine may do you harm as well as good.
26. Don't use alcoholic stimulants of any kind.
27. Don't eat pastry or dainties. They do not nourish you and they may upset your stomach.
28. Take your milk and raw eggs whether you feel like it or not.
29. Keep up your courage. Make a brave fight for your life. Do what you are told to do as though your recovery depended upon the carrying out of every little detail.
30. Always keep in mind that consumption can be cured in many cases and that it can be prevented in all cases.
31. If your own disease is too far advanced for you to recover, console yourself with the idea that you can keep those who are near and dear to you from getting it.

ILLINOIS STATE BOARD OF HEALTH REPORT.

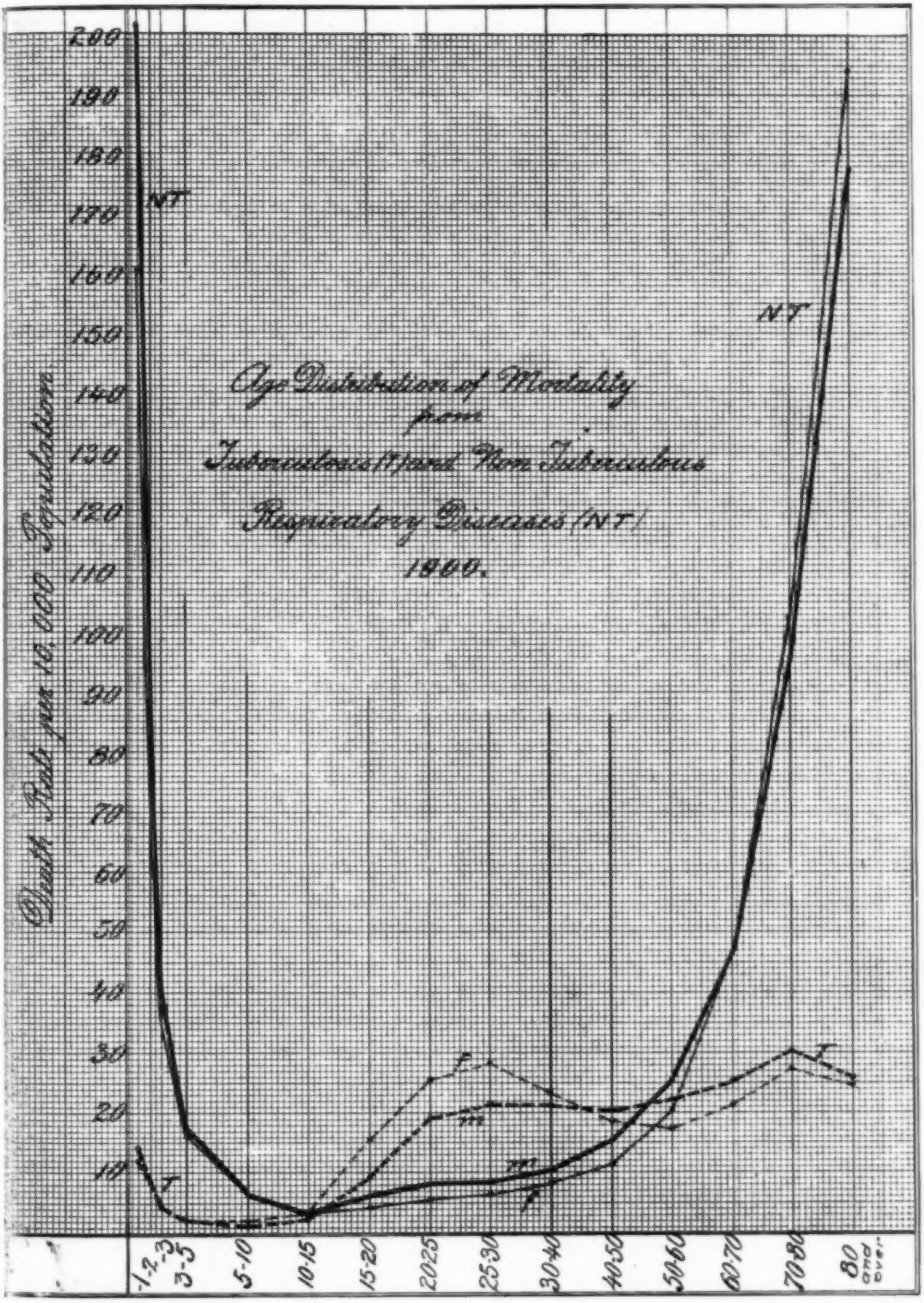
PULMONARY TUBERCULOSIS. YEAR 1903.

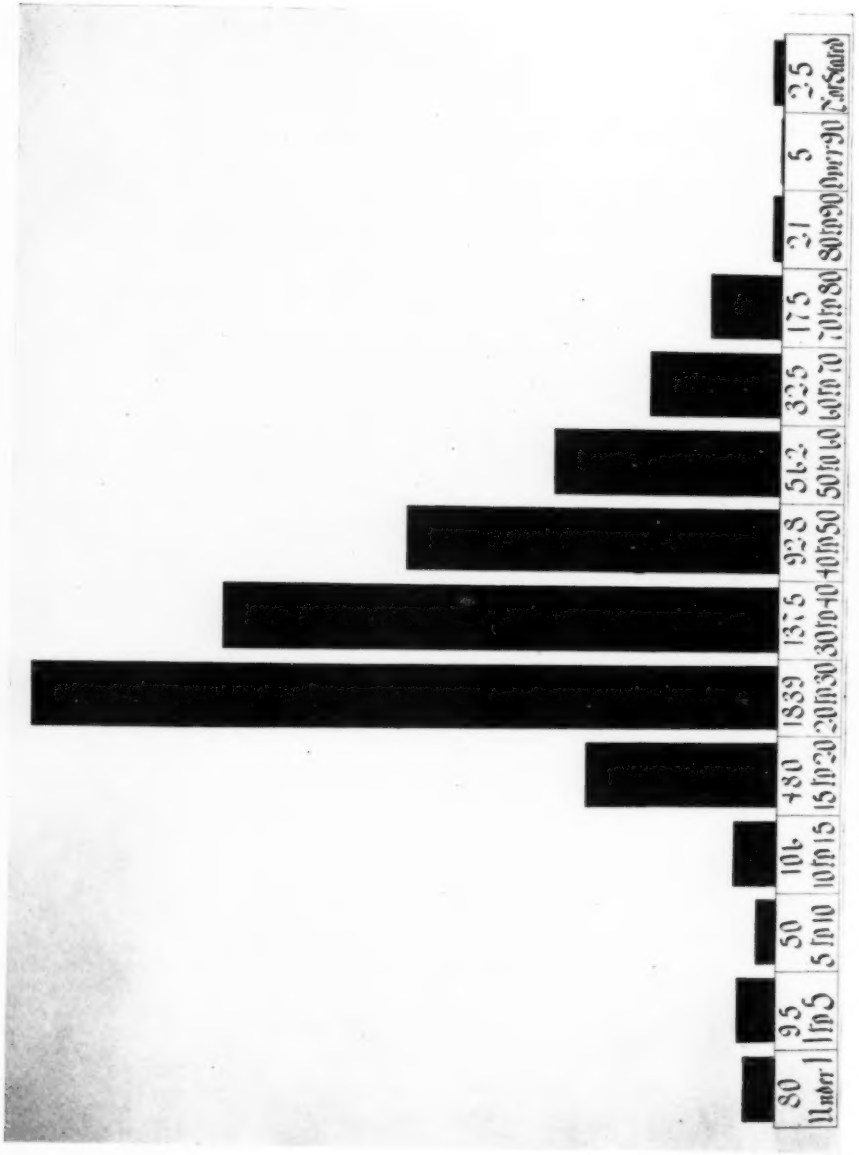
COUNTY.	Males.	Females.	White.	Colored.	Illinois.	United States.	Foreign.	Not Stated.	Single.	Married.	Widower.	Widow.	Not Stated.	Under 1 year.	1 to 5.	5 to 10.	10 to 15.	15 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60	60 to 70.	70 to 80.	80 to 90.	Over 90.	Not Stated.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Adams	47	43	72	18	46	23	11	10	36	34	6	5	9	2				8	28	21	10	11	7	2	1			16	13	12	6	6	2	6	8	5	4	10
Alexander	21	27	16	32	23	22		3	27	16	2	3		1		1	3	6	18	8	5	1	2	1			2	5	3	2	8	7	1	4	3	6	1	6
Bond	3	8	11		8	2		1	3	5	1	2						3	2	2			1	1				1	1	1	1	1	1	1	1	1	1	
Boone	7	10	17		12	4		1	7	8			2	1	2			1	5	2		2	1					4	1	3	2	2	1	2	1	1	1	
Brown	5	12	17		13	2	1	1	5	10	2							3	2	2	3		1							2				1			
Bureau	11	10	21		11	3	6	1	8	9	1		3	1				2	9	2	5	1	1	2				1	2	1	3	3			1		1	4
Calhoun	3	4	7		4	1	2		1	5	1								2	2		1	1	1					2	1	1							
Carroll	3	5	8		6	2			3	3		1	1						2	2			1															
Cass	9	10	19		16	2	1		5	9	3	1	1					2	3	1	4	1				1		3	1	4	1	1	1	1	1	1	1	
Champaign	8	26	33	1	14	16	3	1	13	16	1	3	1	1	2		1	4	7	6	5	3	2	4	1				3	5	2	2	1	1	2	1	1	1
Christian	5	21	26		17	5	3	1	7	16		1	2					2	10	8	4	1	4		1			4	3	5	2	2	1	1	1	1	1	1
Clark	7	19	26		20	6			8	14	1	3				1		6	3	3	3	1	4		1			5	1	3	2	2	1	1	1	1	1	1
Clay	5	6	11		9	2			3	6								3	3	1	1	2						2	1	1	2	1	1	1	1	1	1	1
Clinton	5	8	13		8	1	4		4	6	2	1						1	4	3	1	3	2					3	1	3	2	2	1	1	1	1	1	1
Coles	11	31	41	1	33	5	1	3	18	19	3	2	2	2			1	3	16	9	1	6	1	1		1		3	1	5	7	2	2	1	7	2	6	4
Cook	1,837	1,170	2,818	189	947	688	1,310	62	1,347	1,318	129	113	100	28	54	23	49	204	857	766	544	308	109	49	14	1	1	235	271	280	291	280	261	233	239	228	243	202	234
Crawford	12	14	26		21	5			12	12		2		3	1			4	7	5	2	1	2					4	2	3	3	2	2	2	2	1		2
Cumberland	2	10	12		11	1			3	7		1	1					1	5	2	1	2						2	1	3	1	3	2	2	1		1	2
DeKalb	17	12	27	2	15	6	8		13	11	1	1			1		1	4	5	5	2	6	3	1				3	1	3	3	1	1	1	1	1	3	1
DeWitt	6	6	12		5	6		1	2	6		3	1						5	3	2	1	1	3					2	2	2	1	1	1	1	1	1	1
Douglas	8	12	20		11	7	1	1	8	9	1		2				3	3	5	4	1	1	1	1	1			2	1	4	2	2	1	1	1	1	2	1
DuPage	9	7	16		8	5	3		8	5	1	2		1	2			1	3	1	4	1	1	2	1			1	2	4	2	2	1	1	3	1	1	3
Edgar	15	22	37		22	12	1	2	19	13		3	2	2	1	1	2	5	12	4	4	5	1	2				1	2	4	2	2	1	1	2	1	1	3
Edwards	5	7	12		8	4			4	7		1				1	1	1		3		1	1					2	1	1	2	2	2	1	1	1	1	2
Effingham	7	13	20		15	4	1		5	14	1							1	8	3	1	3	1	1				2	1	2	2	2	2	2	1	1	1	2
Fayette	7	22	29		25	2		2	10	15	1	3		1	2			2	8	5	1	3	4			1		1	1	8	3	2	1	3	1	1	1	4
Ford	4	7	11		5	2	4		2	6	1	1	1		1				3	2		1	3					1	1	3	2	2	1	1	1	1	1	1
Franklin	9	12	21		16	5			6	8	1	5	1		1			3	6	2	4	1	2	3				1	1	4	2	2	1	1	1	1	1	1
Fulton	11	24	35		27	7	1		13	17	1	2	2	1			2	3	12	5	7	1	2	1				1	3	6	3	2	2	1	1	1	1	1
Gallatin	10	10	19	1	14	5		1	9	7		1	3		1			3	5	4	5	1	2	1				1	2	3	2	2	2	1	1	1	1	1
Greene	9	13	22		15	5	1	1	10	8	1	2	1					1	10	4	2	3	2					1	4	1	1	1	1	1	1	1	1	1
Grundy	8	6	14		6	3	5		3	9	2								8	1	3		1					1	1	1	1	1	1	1	1	1	1	1
Hamilton	5	8	13		11	1		1	8	4		1						3	5	2								1	1	1	1	1	1	1	1	1	1	1
Hancock	15	24	39		27	10		2	13	19	2	4	1				1		16	7	5	5	3	2				2	1	2	5	2	1	4	3	2	1	2
Hardin	3	2	4	1	2	3				4	1								3				1					2		1	1							
Henderson	2	2	4		2		2		1	1	1							1		1		1		1														
Henry	11	13	24		6	7	11		12	9	2	2	1				1	5	4	2	7	1	3	1				2	4	1	1	1	1	2	1	1	1	4
Iroquois	19	19	37	1	19	14	5		15	18	2	2	1	1		1		3	17	5	2	3	5	1				3	3	3	2	3	2	3	3	2	2	3
Jackson	8	20	25	3	20	7	1		14	11		3						4	7	6	1	1	3	2				3	2	3	3	2	2	2	2	2	2	4
Jasper	9	14	23		18	2	2	1	9	9	1	2	2		1		1	4	4	4	3	1	1	2		2		2	2	4	3	2	2	2	2	1	2	4
Jefferson	10	21	30	1	28	3			10	17		2	2	1	1				11	6	4	5	1	1	2			4	4	4	3	2	2	2	2	1	1	4
Jersey	9	13	22		18	3	1		6	13	1		1					1	7	6	3	3	1	1	1			4	4	2	4	1	1	2	2	1	1	3
JoDaviess	11	10	21		14	4	3		10	6	2		1						3	5	3	3	1	1				3	3	3	1	2	2	2	2	1	1	3
Johnson	6	9	15		12	3			4	8	3								6	5	3	2	1	2				3	1	3	2	1	2	2	2	1	1	2
Kane	34	48	82		34	22	22	4	34	35	1	6	6	1	1	1	4		27	19	11	8	7	3				9	10	6	4	8	3	7	9	2	6	4
Kankakee	16	37	50	3	18	11	21	3	23	22		3	5	1				1	16	13	16	4	1	1				5	3	2	2	8	1	8	5	6	3	3
Kendall	1	3	4		3		1		2	2									3	1																	

| | | |

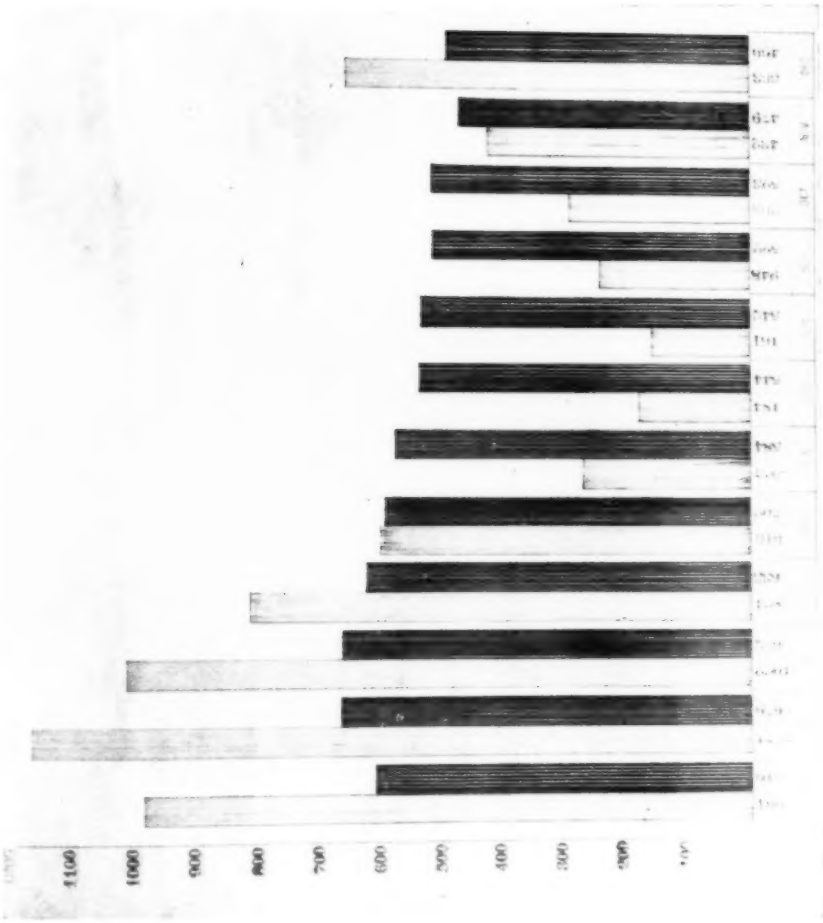


Death Rate by Counties, Black, 1903—Per Cent of Deaths Due to Tuberculosis, Light, 1903.

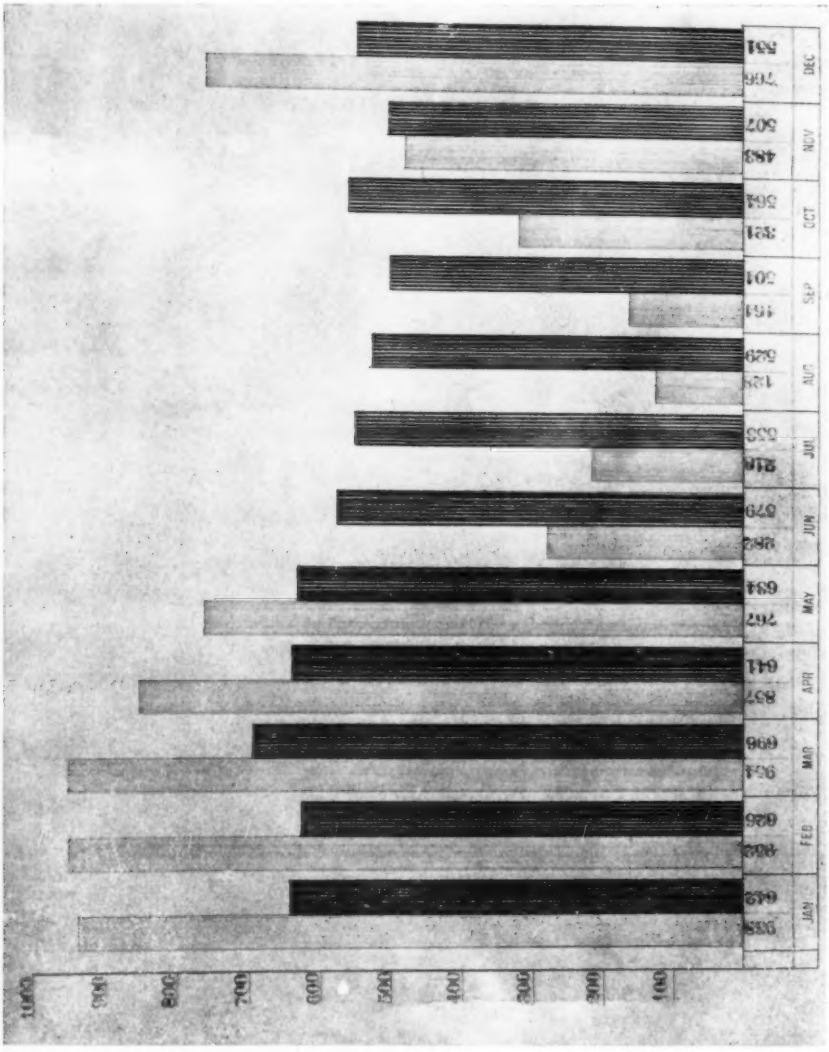

Age Distribution of Mortality
from
Tuberculous (T) and Non Tuberculous
Respiratory Diseases (NT)
1900.
Death Rate per 10,000 Population
200
190
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
NT
NT
T
T
T
T
1-2-3
3-5
5-10
10-15
15-20
20-25
25-30
30-40
40-50
50-60
60-70
70-80
80 and over



Pulmonary Tuberculosis, by Ages, 1903, in Illinois.



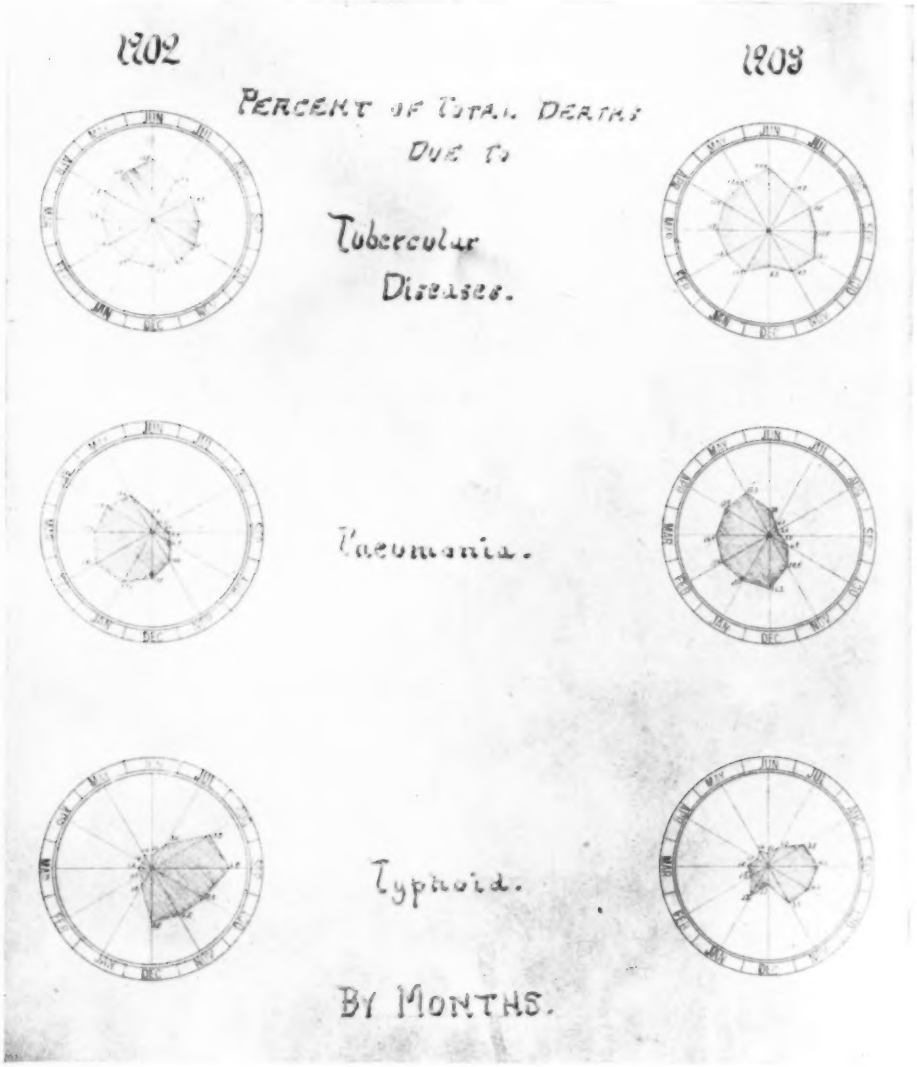
Pneumonia, Light—1903—Tuberculosis, Black. (By Months in Illinois.)



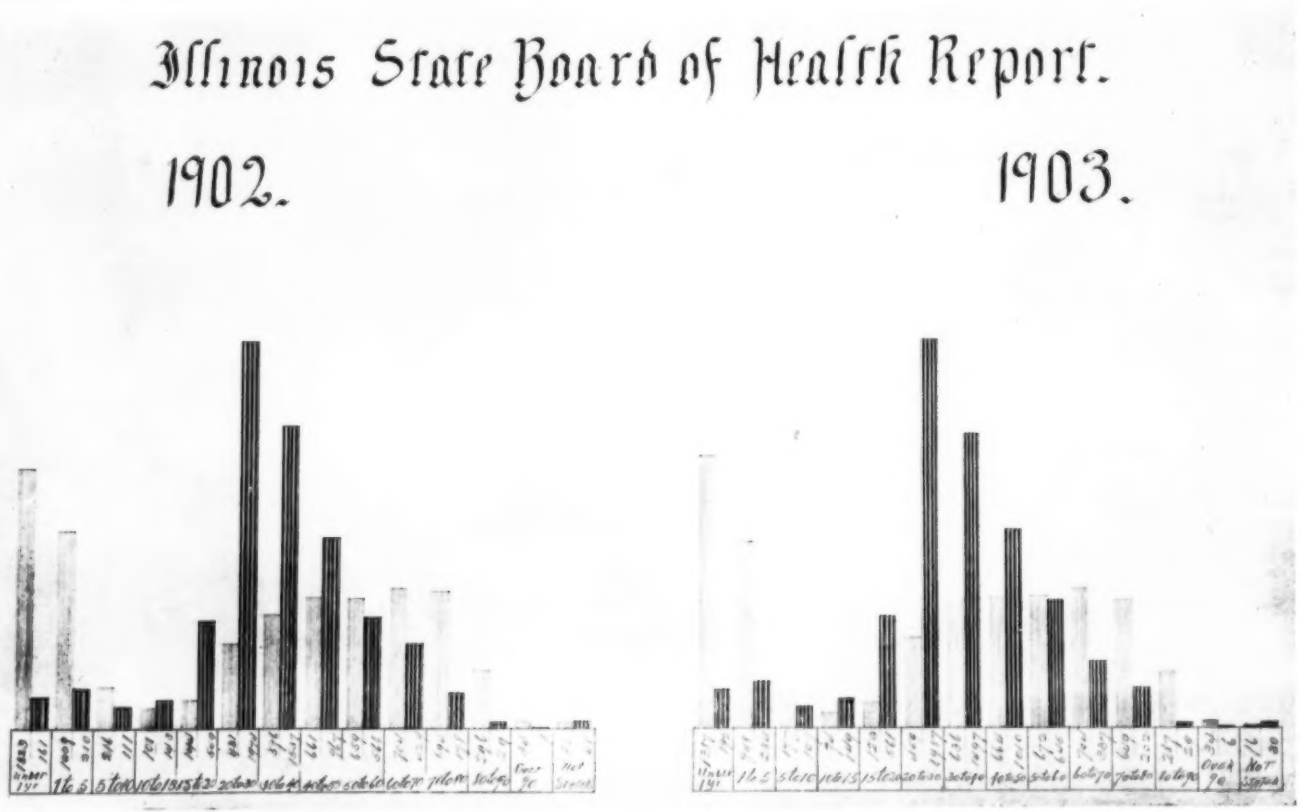
Pneumonia, Light—1902—Tuberculosis, Black. (By Months.)

Table Showing Deaths from Pneumonia and Tuberculosis in Illinois in 1902.

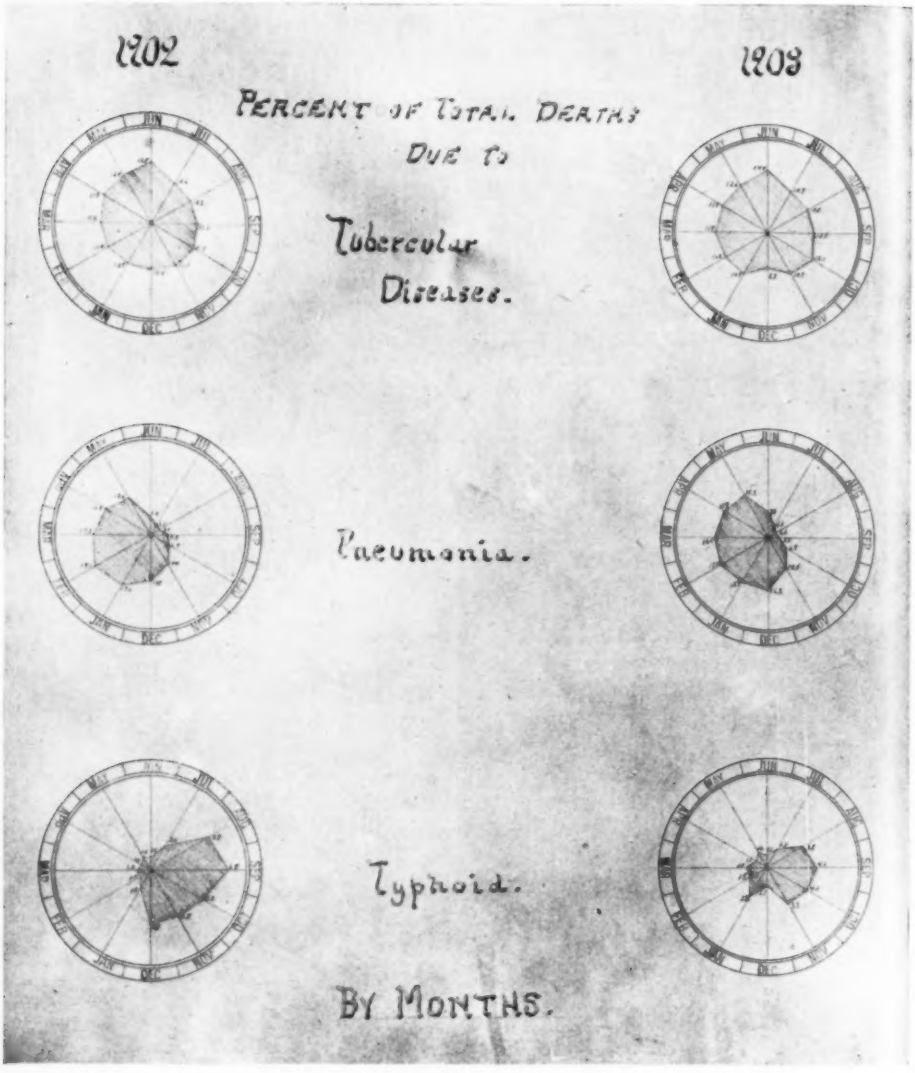
Pulmonary Tuberculosis, by Months, 1903. State of Illinois.



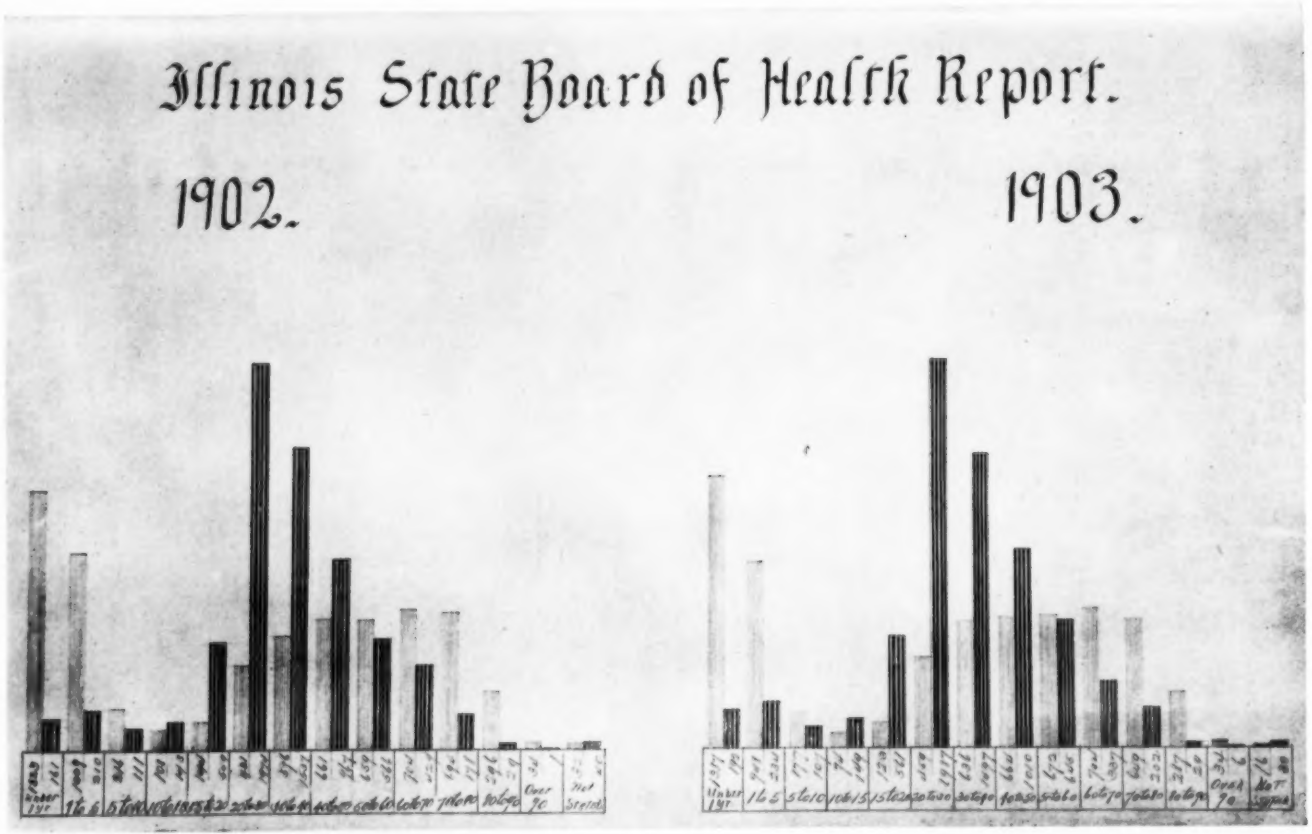
Per Cent of Total Deaths in Illinois by Months 1902-1903.



Deaths from Tuberculosis, Black—Pneumonia, Light, by Ages in Illinois, 1902-1903.



Per Cent of Total Deaths in Illinois by Months 1902-1903.



Deaths from Tuberculosis, Black—Pneumonia, Light, by Ages in Illinois, 1902-1903.

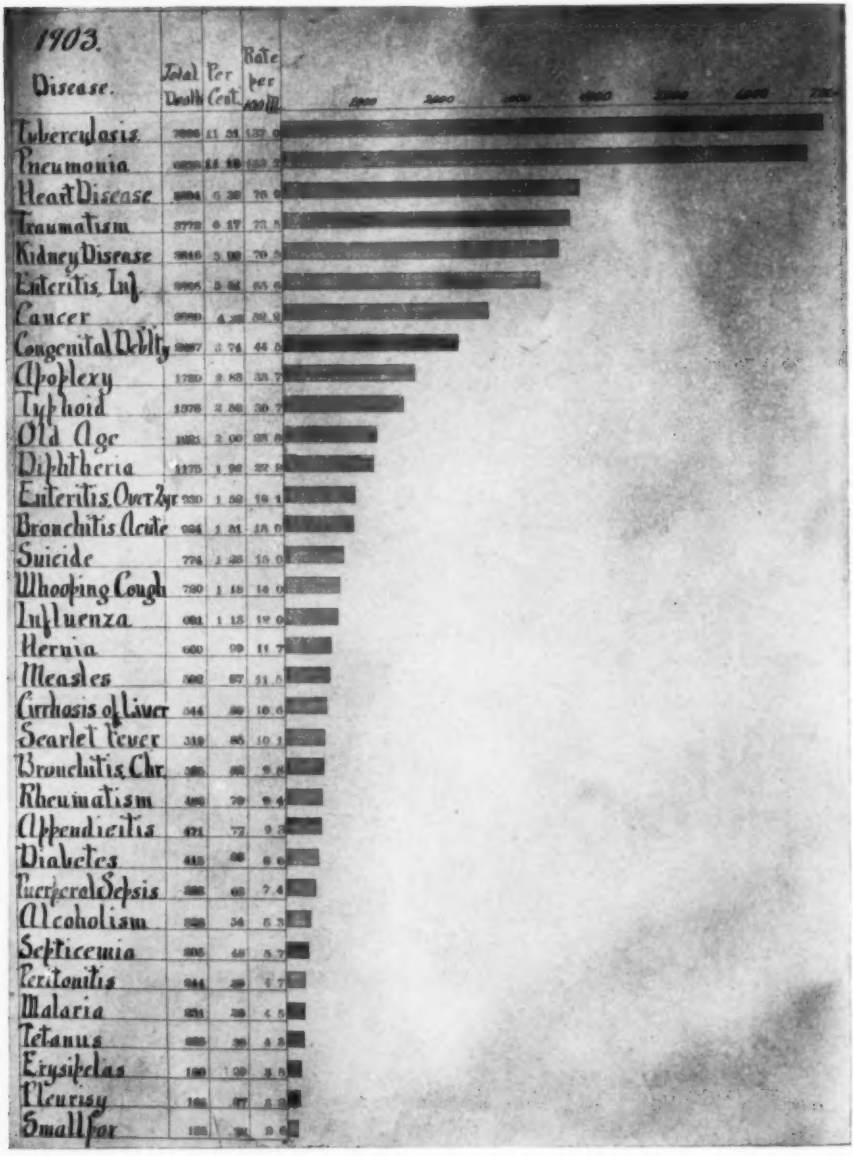


Table Showing Total Deaths, Per Cent and Rate Per Thousand of Diseases in Illinois for 1903.

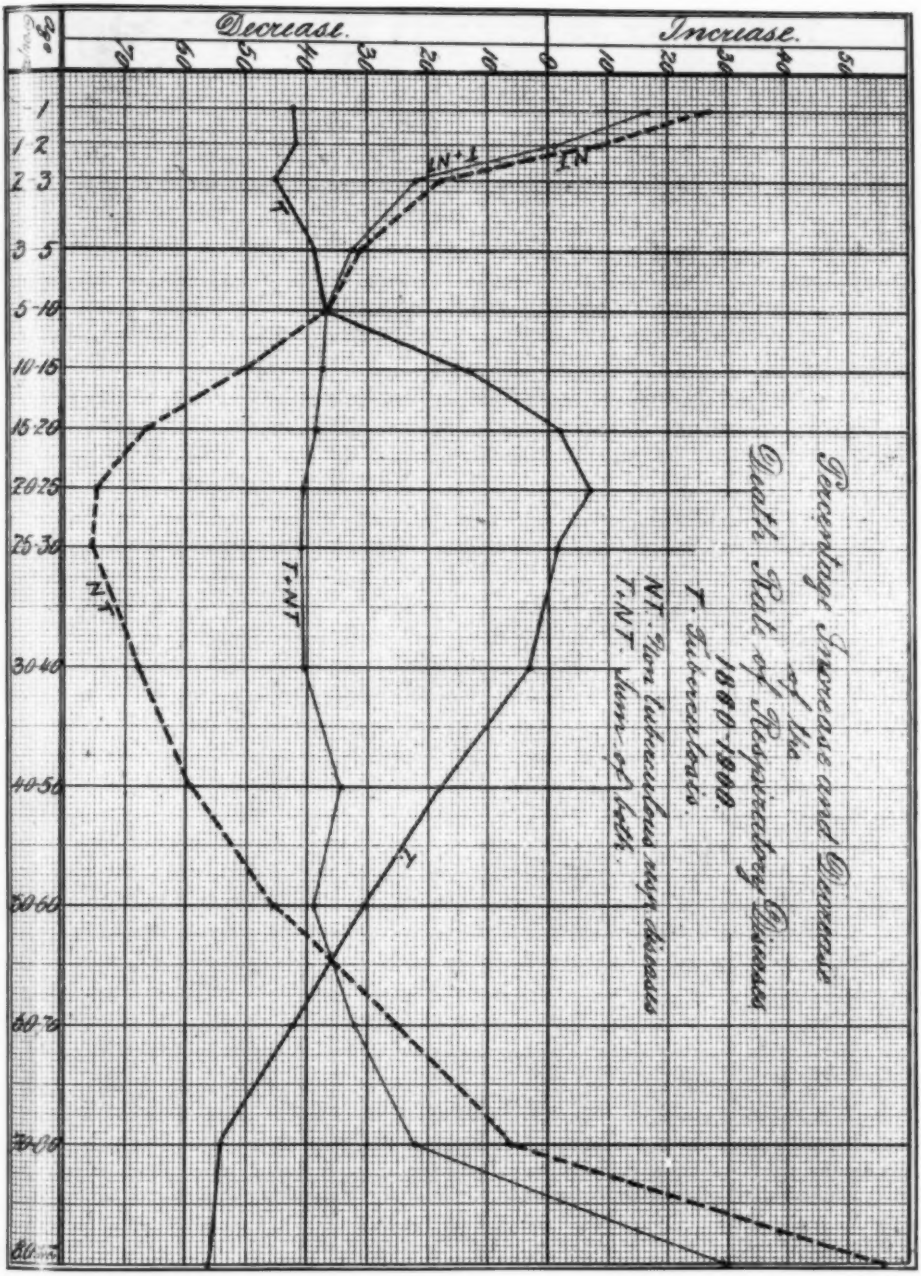


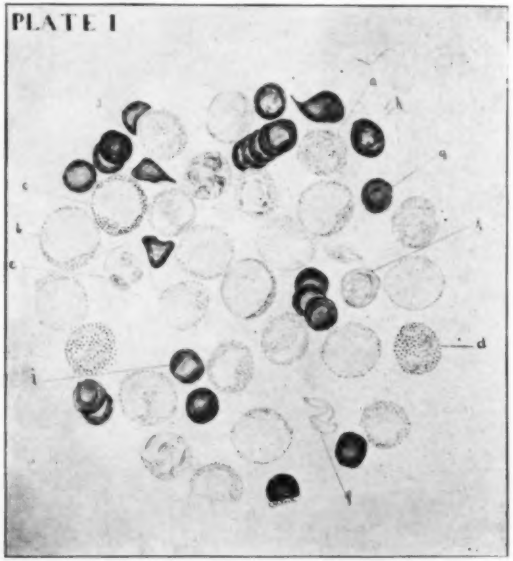
Table Showing Percentage, Increase and Decrease, of Respiratory Diseases from 1860 to 1900.

LEUKEMIA; WITH THE CONSIDERATION OF ITS TREATMENT BY THE ROENTGEN RAY.*

BY EVERETT J. BROWN, M. D., DECATUR.

The especial object of this paper is to report a case of splenomedullary leukemia which has been symptomatically cured by the use of the X-Ray, and to make some incidental remarks upon the diagnosis of this comparatively rare and interesting disease and its treatment by the X-Ray.

In the New York Medical Record for August 22, 1903, Senn reports the first case of splenomedullary leukemia successfully treated by the use of the Röentgen Ray. No further cases have been reported in the literature up to the present time. At the time of the appearance of Senn's report, the patient, whose history I give today, had been under X-Ray treatment for seven weeks.



Photograph showing condition of blood at beginning of treatment. Leucocytosis 800,000.

From the time of the first recognition of this disease a fatal termination has always been expected; yet it is known that occasionally recovery occurs, or there is an apparent arrest, either spontaneously, or after the use of arsenic; hence in recording the effect of any treatment of leukemia the word "cure" must be used with caution. Although an examination of my patient today would show an entire absence of every symptom of the disease, both by physical and blood examination, where ten months ago a most pronounced case existed, yet only time will show the permanency of the result.

Patient. W. E., male, American, aged 30, a cigar maker, unmarried; was first examined July 1, 1903. His family history is negative, except that one sister had tuberculosis.

History. Patient has lived in Decatur all his life; his habits have been good, he does not use alcohol, but he is a moderate smoker. He has had the usual diseases of childhood, with good recovery in all. No history of malaria or syphilis.

Present Trouble. The patient came to the

*Read at the 54th Annual Meeting, May 17, 1904.

office complaining of weakness, pain in the back and a feeling of weight and distress in the left side. Two years ago he had a fall, alighting on the lower ribs of the left side, which compelled him to stop work for two days. He has had a slight cough for some time. For six months he has been troubled with palpitation, dyspnea and slight headaches. Lately he has noticed that his shoes fit tighter at night. He becomes very weak on exertion.

Photograph of chart showing condition of blood after two months treatment with arsenic and X-Ray. Leucocytosis 58.000.

Examination. The patient is moderately well nourished, but has a somewhat cachectic appearance. His present weight is 169 pounds, which is his average summer weight; his expression is depressed; mind clear; frame medium sized; musculature soft; panniculus thin. He is slightly anemic. The visible mucous membranes are of fair color; tongue is moist. There is slight edema of ankles and legs. The lymphatic glands are not enlarged, but the inguinal glands are easily palpated. The thorax is of good size and symmetrical; expansion fair. On percussion, one finds good resonance, the lower lung boundaries normal and descending well; heart sounds are normal; the liver dullness extends to the edge of the ribs, and its thin edge is easily felt. Splenic dullness begins on the seventh rib in the mid-axillary line and extends two fingers' breadth below the navel in the left mammary line. To the right it extends one finger's breadth beyond the median line. One palpation the spleen is a hard, smooth, thick mass. No notch can be felt. The radial pulse is easily compressed, is moderately full and regular, with a rate of about ninety. Temperature is 99.

Examination of Fluids. The urine gives a slight precipitate with heat and acid, and a few hyaline casts are found in the sediment. The blood examination, made by my associate Dr. C. M. Jack, is as follows: Red blood corpuscles, 2,600,000; leucocytes 800,000; hemoglobin, 65 per cent; specific gravity, 1,050. On staining with Ehrlich's triple and Jenner's stains, the reds show a slight paleness, slight poikilocytosis and many nucleated forms. The differential

count of the leucocytes gives: Polymorphonuclear, 40 per cent; myelocytes, 40 per cent; eosinophiles, 8 per cent; large mononuclear with basophilic granules, 8 per cent; degenerates, 4 per cent.

Clinical Diagnosis. Splenomyelogenous leukemia.

Treatment. The patient was informed of his condition and advised to stop work. I gave arsenic and iron internally and X-Ray treatments to the splenic region twice a week.

Course. After one month the patient seems improved; feels stronger, and his appetite is better. On examination the spleen is apparently smaller, the right edge extending only to the sternum and the lower edge on a line with the navel. The ankles are still swollen, but the blood shows a marked decrease in the number of leucocytes with a slight increase in the red blood corpuscles and in the amount of hemoglobin. Blood smears show an apparent increase in the transitional forms with decrease of myelocytes. The normoblasts are markedly increased. The urine still contains a trace of albumin.

September 1. The patient has returned to work. His general condition is improved; appetite good, with a gain in weight. The spleen has decreased in size and a notch is felt for the first time. Edema of ankles is less. Blood: leucocytes decreased to 58,000, with an increase in the red blood corpuscles to over 3,000,000.

Encouraged by results of treatment, which had varied very little in the last two months, and by Senn's article, which appeared at this time, it was decided to discontinue the iron and arsenic and to increase the frequency and distribution of the X-Ray exposures. These treatments were now given daily to the splenic region, the ends of the long bones, and to the sternum. In place of the iron and arsenic, one grain capsules of quinine, three times a day, were given as a placebo.

October 4th. The patient has not missed a day's work in the last month. The blood

Photograph of chart showing condition of blood after arsenic was withdrawn. Leucocytosis 137,000.

shows an increase in the number of leucocytes; the number of red blood corpuscles and the amount of hemoglobin, however, still show an increase. The spleen can be pushed to the edge of the ribs. An X-Ray dermatitis of the splenic region has appeared once or twice, the outer layers of skin desquamating, but by discontinuing treatment for a few days and using a dusting powder, no bad results have followed. The skin over the exposed surfaces was rough at first, but after exfoliation has become smooth again. The hair and pigment have disappeared from the parts exposed.

November 9. Blood: leucocytes, 129,000; red blood corpuscles, 4,124,000; hemoglobin 85 per cent. Very little variation in size and shape of the red corpuscles and no nucleated forms were found. Myelocytes, 25 per cent; polymorphonuclear, 60 per cent; eosinophiles, 5 per cent; small lymphocytes, 1 per cent; degenerates, 3 per cent.

Blood examinations were now being made weekly and to simplify matters will refer you to charts showing the results of these examinations with dates when made.

Date.	Red Cells.	White Cells.	Hemoglobin.	Nucleated Red per 100 Whites.	Small Lymphocytes.	Large Lymphocytes.	Polynuclear Neutrophile.	Polynuclear Eosinophile.	Myelocytes.	Myelocytes Eosinophile.	Large Mononuclear and Transitional.	Basophile.	Degenerates.
July 1, 1903	2,000,000	800,000	60%	2	0	0	40	4	49	2	0	0	3
Aug. 9, 1903	2,190,000	160,000	65%	10	5	0	44	3	40	5	1	0	2
Sep. 6, 1903	3,170,000	38,000	70%	2	4	0	39	2	24	1	4	0	1
Oct. 4, 1903	3,940,000	160,000	80%	0	1	0	54	1	25	3	4	0	1
Nov. 9, 1903	4,124,000	129,000	85%	0	2	0	60	0	25	1	1	0	3
Dec. 6, 1903	4,360,000	44,300	85%	0	1	0	74	.5	20	0	0	0	1
Jan. 3, 1904	4,968,000	25,000	90%	0	4	0	83	3	8	.5	0	0	1.5
Feb. 7, 1904	4,700,000	11,500	95%	0	10	1	85	1	2	.5	0	0	1
Mar. 6, 1904	4,940,000	8,148	95%	0	11	2	81	1	2	0	0	0	2
Apr. 2, 1904	5,100,000	7,130	100%	0	12	2	84	1	0	0	0	0	1
May 1, 1904	5,700,000	8,921	100%	0	10	2	82	1	0	0	0	0	1

In February, after seven months treatment, the albumin had all disappeared from the urine and the patient weighed 182 pounds, which is more than he had ever weighed before. The spleen could only be felt on deep palpation. Treatments were reduced to every other day and the patient was advised to take long walks on the intervening days.

April 16. There is very slight edema of the legs. General appearance is excellent; color good; pulse, full and compressible with a rate of seventy.

The following notes, taken during the preparation of this paper, shows the present condition of the patient.

May 1. The appearance of the patient at present is one of most robust health. His complexion is florid, quite a contrast to the cachectic appearance of ten months ago. He is working daily and rides his bicycle back and forth from work. The liver is of normal size and the spleen is not palpable even on deepest inspiration. The ankles show no edema. His weight is 184 pounds. The abdominal parietes are relaxed, but there is no ascites. The previous inguinal adenitis has entirely disappeared.

It is well known that many cases of leukemia go unrecognized, and many mistakes are made in its diagnosis; that the tumor in the left side of the abdomen is of splenic origin, is often not determined; in women the abdominal enlargement is sometimes mistaken for an ovarian tumor or for pregnancy; in other cases a tumor of the left kidney may be suspected; syphilis with enlarged spleen has been called leukemia; the pallor has suggested pernicious anemia; the cachexia malignant disease or tuberculosis. The edema, and the albumin and casts in the urine, have caused the diagnosis of nephritis to be made. The pain in the side, the enlarged area of dulness and occasional friction sounds have suggested pleurisy. The priapism has caused a diagnosis of spinal lesion to be made.

A study of the first symptoms for which the patient seeks advise is of great interest in this disease; the following have been collected from the literature; dyspnoea, with or without pallor and cachexia; enlargement of the abdomen; priapism; epistaxis; hema-

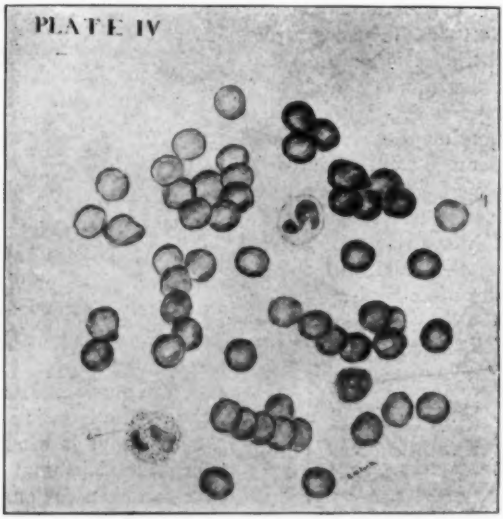
temesis; bleeding from the gums, and pain in the left side.

The diagnosis of leukemia is possible in many cases without a blood examination, although this means is liable to great error, for it is well known that the clinical symptoms of the three diseases, leukemia, pseudo-leukemia and splenic anemia may be the same. Dock says that at least one-half of the greatly enlarged spleens found in this country are due to leukemia.

The enlarged spleen may be barely palpable beneath the left costal margin or it may

prognostic standpoint: epistaxis is the most common form and in quite a number of cases reported this has been the first symptom noticed. Osler reports two cases of hematemésis in one of which there had not been the slightest suspicion of the existence of leukemia. Bleeding from the gums, hematuria or hemoptysis may occur, or there may be extensive purpura or hemorrhagic retinitis.

In the large proportion of all varieties of leukemia a blood examination establishes the diagnosis beyond doubt; with a leucocytosis



Photograph showing condition of blood after seven months treatment. Leucocytosis 7894.

be so massive as to quite fill the abdomen; it is distinguished from other tumors by the following points: the large, smooth, broad and firm mass occupying the upper left quadrant of abdomen and having a sharp angular or obtuse edge of the right border; this edge showing a notch or notches; this tumor when not too large moves with the diaphragm on respiration, and does not fill the left lumbar space, the latter remaining soft, thus differing from kidney tumors which always fill this space.

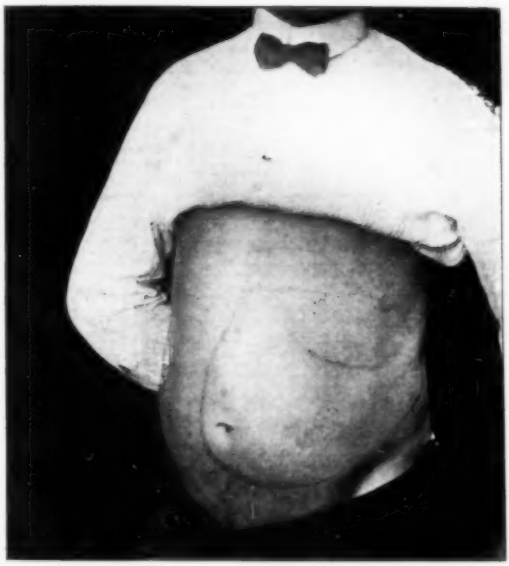
The hemorrhages of leukemia form an interesting study both from a diagnostic and

passing the 150,000 mark of which a large proportion (20 to 60 per cent) are myelocytes, the splenomedullary form is determined; while in the lymphatic form a still higher proportion of its distinctive cell, the lymphocyte, (85 to 90 per cent) is found. But in some cases of leukemia especially of the lymphatic form there may be less than 150,000 white cells and less than 90 per cent of lymphocytes, thus showing a blood examination sometimes seen in inflammatory leucocytosis or in "VonJaksch's anemia of infants." Also the ordinary mixed form will at times during the course of the disease from the

influence of some intercurrent infection, or spontaneously, or after the use of drugs, especially arsenic, show a blood picture approaching normal or at least only that of an inflammatory leucocytosis. It is well known too that the early stages of leukemia often escape detection.

To summarize: in the diagnosis of the myelocytic form of leukemia, the blood shows the following signs; first, a leucocytosis usually passing the 150,000 mark; second, a large proportion of myelocytes; third, an increase in the number of eosinophilic and basophilic cells, and fourth, the appearance of nucleated red cells, both normoblasts and megaloblasts. In the lymphatic form, the lymphocyte is the only leucocyte which is greatly increased and as stated above may reach the enormous figure of 99 per cent. Hence in the study of the blood of leukemia, the two cells forming the basis for diagnosis are the myelocyte and the lymphocyte; as both of these leucocytes are found in normal and in other pathological blood, it is necessary to state that it is the large proportion of these cells which are pathognomonic.

The consideration of the X-Ray treatment of leukemia is inseparably connected with that of pseudoleukemia or Hodgkin's disease. Troje, and a large portion of the French school, regard pseudoleukemia as pathologically a fore-runner of leukemia. Mosler has reported an apparently genuine instance of the transformation of the false into the true leukemia, but most hemotologists deny that there is any relationship between the two diseases.



Splenomyelogenous leukemia. Photograph showing size of spleen before treatment and after four months treatment.

To Pusey of Chicago belongs the credit for first utilizing the X-Ray in the treatment of pseudoleukemia; before the Chicago Medical Society, on February the 26, 1902, he exhibited two cases symptomatically cured; he also reported a case of the true leukemia treated for a short time but without benefit. Since then the literature shows nearly a score of cases of pseudoleukemia treated by various physicians and with various results. In leukemia, however, only two

cases have been reported: the one by Senn and the one which forms the subject of my paper today, and which I reported in brief last month in the Journal of the American Medical Association. Since beginning the preparation of this paper, however, I have learned by private correspondence of two other cases which had been symptomatically cured by the Röentgen ray; one of these was reported by Dr. Charles H. Webb of Philadelphia, in a paper read before the "Section on General Medicine" of the "College of Physicians of Philadelphia" on April 11th, 1904; the other case was treated by Dr. J. T. Dunn of Louisville, Kentucky, who is now preparing a report for publication.

The case I report today was treated for a period of eight months, and was given in all 106 exposures; these were given at first biweekly, the splenic region being treated for ten minutes with a moderately hard tube, at a distance of ten inches, and later the treatments were given daily, the various long bones as well as the spleen being exposed. All treatment was discontinued eleven weeks ago.

In conclusion I will say that the time is too short to report these cases as successful results, yet when we consider that we are treating a disease, which from time immemorial has been labeled "fatal," the results are at least encouraging.

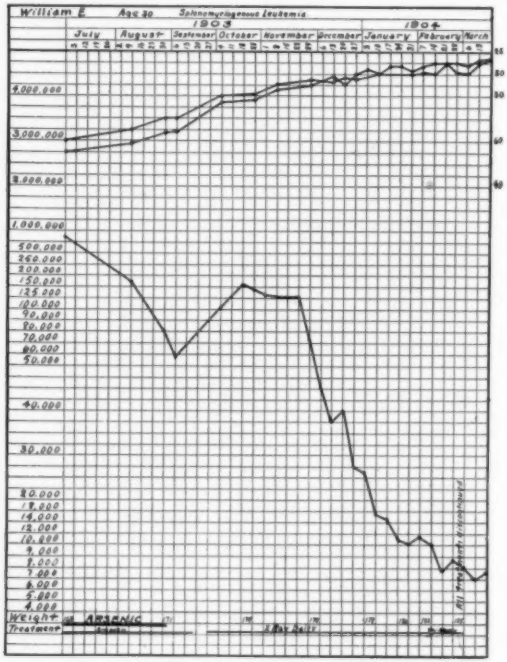


Chart showing blood count, hemoglobin estimation, weight and treatment. The upper line gives the percent hemoglobin, the next the number of red cells, and the next the number of white cells.

Description of Plates.

These plates were photographed from plates made from actual fields.

I-II—Erhlich's triacid stain.

III-IV—Jenner's stain.

a—Polymorphonuclear leucocyte.

b—Myelocyte, with ordinary granulation.

c—Myelocyte with eosinophilic granulation.

d—Eosinophilic leucocyte.

e—Polymorphonuclear leucocyte deficient in granules.

f—Degenerating leucocyte.
g—Normal red blood corpuscle.
h—Normoblast with dividing nucleus.
i—Normoblast, polychromatophilic.
j—Poikilocyte.
k—Lymphocyte.
l—Mast cell.
m—Rouleau of red corpucles.
n—Normoblast.

Discussion.

Dr. A. W. Baer, Chicago: The essayist did not tell us how long he kept the patient under treatment at each seance, nor the source of his rays: what kind of a tube he used; whether he used the coil or the static machine, and if the latter, what size machine was used. These details of technic are very important, and I hope, that in his closing remarks, he will give us all of the technic followed.

Dr. Harold N. Moyer, Chicago: I want to add a not well observed case of leukemia I saw in consultation some months ago. I classified it as one of true leukemia. The patient improved very much under X-Ray treatments and is now almost well. The spleen, which had nearly filled the abdomen, was reduced to the margin of the ribs. No blood count was made so that I cannot speak definitely about that. The whites were enormously increased and were not within twenty thousand of the normal. The cessation of the X-Ray was followed by a relapse, although the patient did not get as bad as he was at the beginning of the treatment. The re-application of the ray was followed immediately by a marked improvement which has persisted up to the present time.

Dr. Brown, closing the discussion: In regard to the tube and apparatus used: I am not an X-Ray operator. I have an assistant do all that work for me so that I am not very familiar with the technic. We use a moderately high tube, usually a Gundlach, although we have used American tubes, so that we can get the action of the X-Ray on the long bones, regarding the medulla as one of the blood forming organs. In fact we treat the medulla of the bones more than we do the spleen itself, and for that reason we always use a moderately hard tube.

I use a static machine.

THE SUBCUTANEOUS INJECTION OF PARAFFIN MORE PARTICULARLY FOR THE CORRECTION OF NASAL DEFORMITIES.*

BY JAMES T. CAMPBELL, M. D., CHICAGO.
Professor of Laryngology and Rhinology in the Post-Graduate Medical School.

The subcutaneous injection of paraffin for prosthetic purposes was inaugurated by Gersuny (Zeit. fur Heilk.), in 1900, when he injected paraffin into the scrotum of an emasculated young man.

Since then it has been employed to raise the cheek after excision of the lower jaw; to

Before Injection.

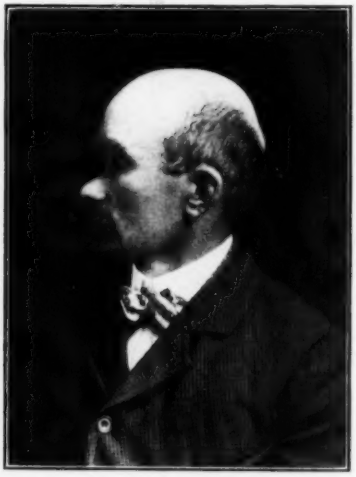
fill a cavity in bone after operation; to obtain a movable joint after resection; to fill the defect in a trephined skull; to support

After Injection.

the weight of blood in varicose veins by making a firm swelling of paraffin around the vein; to cure incontinence of feces or incontinence of urine in the female by injecting

*Read before the Chicago Laryngological and Climatological Association, April 18, 1904.

paraffin under the prolapsed mucous membrane; to retain a hernia; to fill out the flatness of the chest after breast operations; to raise sunken cicatrices on the face, the result of tooth suppurations in the lower jaw; to make a foundation for an artificial eye; to coapt the edges of persistent openings after



Before Injection.

radical mastoid operations; to prevent nerve regeneration after resection; to narrow a palate cleft, and to extend a shortened soft palate; to raise the membranes over shrunken inferior turbinated bodies in ozena; and, above all, to improve the appearance of depressed noses.

Dangers in the Use of Paraffin are due to faulty technic. Embolism following the injection of paraffin into a vein was first reported by Pfannenstiel (Centralblatt fur Gynak.), in 1902. He injected 30 c.cm. of paraffin, having a melting point of 115° F., into the loose cellular tissue of a woman suffering from bladder prolapse. Shortly after leaving his clinic she had a pulmonary embolism, with the characteristic symptoms of cough, quickened respiration, dyspnea and cyanosis. After suffering for one week, the trouble gradually subsided.

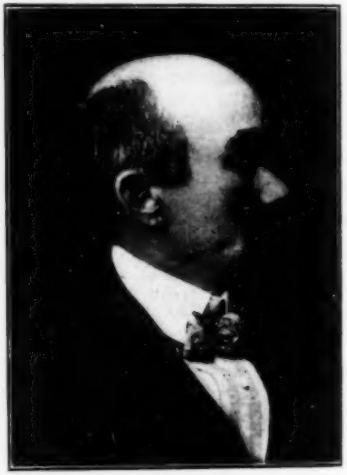
Leiser (Vereinsbeilage der deutschen medicinischen Wochenschrift, April 3, 1902, p. 110) reports a case of thrombus of the ophthalmic vein, and Hurd and Holden (Medical Record, July 11, 1903) a case of embolism of the central artery of the retina, resulting in loss of vision after paraffin, having a melting point of 114° F., was injected into the nose. For such a misfortune to happen, the patient must have had a patent foramen ovale.

Comstock, of the University of Minnesota, in his experiments on rabbits found that the danger of embolism is particularly great when injecting paraffin of low melting point, 102° F., and thereabouts.

Hyperinjection has caused gangrene of the overlying skin.

Abscess resulted in one case, of which I have knowledge, where the operator injected through the mucous membrane to raise the skin of a depressed nose, and though much of the paraffin escaped, yet a fair result was obtained.

In one of our cases where, at the third injection, the paraffin was placed at the root of



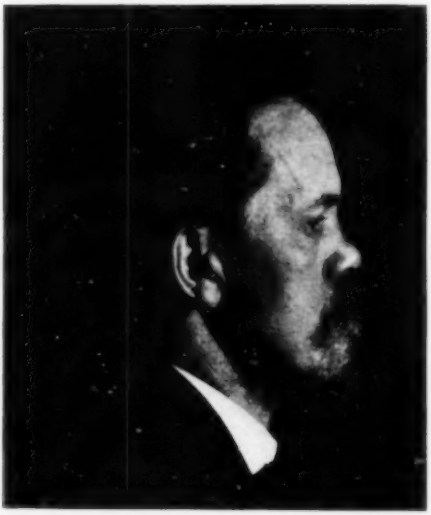
After Injection.

the nose, edema of the upper lids followed, but passed away in three or four days.

Urbantschnitsch (Monatsch. fur Ohrenheilk., No. 9, 1903) reports a case of a sluggish mastoid wound where paraffin was injected on the mass of indolent granulations. Cell activity was stimulated, and healing speedily brought about.

The greatest difficulty in injecting for the correction of saddle-back nose is to prevent undue spreading of the paraffin. In all cases some broadening of the dorsum persists, and to obviate this, soft metal clamps have been devised, with indifferent success. Noses vary so much in contour that the only practical lateral compressor is our assistant's index fingers.

Where paraffin is malplaced, it can be removed only by surgical means; locally applied heat will not soften the mass; incision and curette must be employed.



Before Injection.

All paraffins shrink; the higher their melting point, the greater the shrinkage, but the injection of a few additional drops can be made at any subsequent time.

What becomes of the paraffin? It is probable that very hard paraffins, such as that used by Eckstein, which has a melting point of 136° F., become encapsuled, whereas those with a melting point of 104° to 115° F., very slowly becoming permeated with leucocytes and tissue cells, are replaced by fibrous tissue.

Brady (Australasian Medical Gazette, May 20, 1903), after a lapse of six months, had to do a secondary operation, on account of paraffin being misplaced. On cutting down, he found a mass of newly formed tissue of fibro-cartilaginous consistence.

Preparation of the Paraffin. After experimenting with various paraffins, we have chosen that having a melting point of 112° F. The ordinary paraffin of commerce has a melting point of about 128° F., and, roughly speaking, four parts of such paraffin, to which are added five parts of albolene, give a mechanical mixture which has a melting point of about 112° F. This is placed in a test tube, thoroughly sterilized, and laid aside till required.

Injection Procedure. The syringe employed, as you see, has a solid metal piston, with a coarse screw worm on the piston rod, which enables one to eject the semi-solid paraffin, slowly and steadily. The needle is of the size generally spoken of as a serum needle.

After Injection.

The syringe is boiled, the sterilized paraffin is melted in a water bath, and the field of operation prepared by scrubbing with green soap, ether and alcohol.

The paraffin is drawn into the syringe till it is about seven-eighths full; the needle is attached, and a few drops of hot sterile water are drawn up to fill the needle. This last

maneuver prevents a mass of paraffin from plugging the needle by cooling there more quickly than in the loaded barrel. The syringe is then placed in sterile water, which is kept at a temperature of 120° F., till ready for use.

The assistant now places an index finger on either side of the dorsum of the depressed nose, as high as the inner canthi, and makes firm lateral pressure, so as to prevent any malplacement of the paraffin.

Before Injection.

The needle punctures the skin one-half of an inch below the lowest point of the depression, and is carried upward subcutaneously to its upper limit. The operator then making firm pressure on the dorsum of the nose above the depression and between the assistant's index fingers, slowly empties the syringe. As the space fills, the needle is gradually withdrawn, leaving its deposit of paraffin as it recedes.

The paraffin sets quickly, hence any necessary moulding must be done at once. During injection the overlying skin becomes much blanched, reaction, however, speedily sets in, and the part becomes reddened by dilatation of the superficial vessels. This redness corresponds to the tension to which the overlying skin is subjected, and it may persist from a few hours to many months. Inasmuch as the injection of small quantities of paraffin causes but little reaction, I am in the habit of using not over twenty to thirty minims at one time, even if the deformity is not entirely corrected, because it can be repeated at intervals of a week, until the nasal outline is satisfactory.

Except in the case of a small child, no anesthetic is required.

Where cicatricial adhesions exist, they must be divided subcutaneously, and paraffin injected at once, to keep apart the raw surfaces.

After withdrawal of the needle, the puncture is sealed with flexible collodion, and ice compresses applied to the nose for a few hours; but on using paraffin in such quantity as I mention, the reaction is so slight that it need not interfere with the patient's daily routine.

After Injection.

Where redness persists, it has been suggested that, inasmuch as the x-ray will blanch unsightly red scars by producing a hyperplasia of the connective tissue cells, which squeezes the blood out of the vessels, that it should likewise cause a speedy disappearance of paraffin erythema.

Paraffin prosthesis is now a well-establish-

ed practice, and improvement in its technic should be our earnest endeavor. The unfortunates with depressed noses are subject to remarks and stares of the thoughtless and the ignorant, with whom they come in contact. By shaping their features like those of normal men, we will earn their lasting gratitude.

1010 Venetian Building.

SYMPHYSIOTOMY IN PERSISTENT MENTO-POSTERIOR FACE PRESENTATIONS; WITH REPORT OF A CASE.*

BY E. B. MONTGOMERY, M. D., QUINCY.

Symphysiotomy today is so rarely the operation of choice and the indications for its performance have become so few that it seemed to me of interest to report a case in which I chose it to facilitate delivery of the child in persistent brow presentation. Here it is evident is a very positive indication for its performance that has not often been followed, as a careful search of the literature of the subject shows but very few reported cases. The only alternative operation is craniotomy, and with slight additional risk to the mother involved in a properly performed symphysiotomy, the former should not be considered in the living child if the consent of the mother for the performance of the latter can be obtained. Few mothers would prefer to have the living child surely sacrificed in preference to taking a slight additional risk to themselves and probably or at any rate possibly save its life.

My case is briefly as follows: Mrs. J. W. M., aged 37, a primipara, after a very comfortable gestation of nine months, had an escape of liquor amnii at 6 a. m., on December 6, 1903, which occasioned my being summoned. I found no evidence of labor or dilatation of the os, but pretty complete loss of the amniotic liquor. The pelvis was normal in its dimensions with a conjungata vera of 11 c.m. Labor pains began about 2 p. m., and were from that time almost continuous and so severe that small amounts of chloroform were given by inhalation from time to time as the labor progressed. After two hours it could be determined that the child's brow was the presenting part and as dilatation was but tardy, some aid was given to that progress by manual method. No change could be made in the child's position and with the continuance of labor we had an impacted face presentation to deal with, the chin in the hollow of the sacrum. A very moderate use of the forceps soon showed that delivery by that means was impossible. At 4 a. m., in consultation with Drs. Robbins and Ernst Zimmermann it was decided, the patient consenting, to have her removed to Blessing Hospital for a symphysiotomy.

She was removed in ambulance to the hospital and at 7 a. m., after preparation of the patient, a symphysiotomy was done. An incision three and five-tenths c.m. in length was made over the symphysis in the median line, and an attempt made to sever the articulation with a strong scalpel. Owing to what at the time, was supposed to be osification of the joint, this was not possible and a small metacarpal was used for severing the bone the subpubic ligaments being afterwards cautiously dissected from the bone with the scalpel. A metal catheter in the urethra and index finger in the vagina were used as guides. After division of the symphysis which was fully five c.m. in depth, the patient was brought to the edge of the table in the lithotomy position and the thighs abducted and supported by Drs. Robbins and Zimmermann giving a separation of six c.m. at the symphysis. I then applied the forceps and with some difficulty delivered the child which was living but so cyanotic and exhausted that despite efforts at resuscitation it did not survive but thirty minutes. No perineal laceration occurred. The child's head was less than ten c.m. in its bi-parietal diameter and delivery could easily have occurred in this mother but for the faulty presentation. The after treatment consisted in the suturing the suprapubic wound, an application of aseptic dressings. The pelvic sling advised by Ayers where his hammock bed is not available, was used after the third

*Read at the 54th Annual Meeting, May 17, 1904.

day, this permitting better care and cleansing of the patient and producing approximation of the bones. Callus was thrown out and solid union occurred by the twenty-eighth day. During the patient's convalescence and just as she was ready to leave the hospital at the end of of fourth week, she contracted a suppurative tonsilitis of severe type which was followed by a prolonged septicaemia and later nephritis which necessitated her remaining in the hospital four weeks longer. Since February 15th, she has been about and has now quite recovered her usual health. Her gait has been quite unaffected by the operation.

While I do not in general favor symphysiotomy as an operation of choice, in moderately contracted and deformed pelves to permit delivery of the child at term, I think that in unchangeable brow presentation where the only alternative is craniotomy of the living child, we have a positive indication for its performance provided the patient is willing to take the slight additional risk involved. Still it does not seem to have been done in these conditions often. Edgar says in his recent work on obstetrics "in the past most authorities agreed that perforation is the indication of necessity even in the living child. Symphysiotomy has been suggested as applicable to this complication. I do not know that it has ever been applied." The American text book on obstetrics as well as those of Drs. J. C. Webster and Whitbridge Williams coincide with Edgar's opinion, but give no record of any clinical cases. The only literature bearing on the subject with report of cases that I could find by the aid of the index medicus, is the paper by Wallack on "Symphysiotomy in Persistent Brow Presentations," published in the transactions of the Paris society of obstetrics, gynaecology, and pediatrics, for January, 1902. Wallack's study covers nineteen cases, all of them occurring in Pinard's clinic in Paris. His conclusions are as follows: Dystocia caused by persistent frontal presentation, is very grave, when plainly distinguished from *transitory* presentations of the forehead. In nineteen cases parturition was spontaneous in two cases only; the uterus was lacerated twice, the vagina once; two women died, as well as eleven children. None of these cases were treated by symphysiotomy but seven since 1894. Dystocia from persistent presentation of the forehead was observed when the pelvis was normal and when dimensions of the fetal head were not increased. Eight times the conjugate diameter was more than ten c.m. Four pelves were entirely normal. In fourteen out of the nineteen cases the pelvis was considered normal and only four times was the conjugate diameter more than ten c.m. The bi-parietal diameter of the head attained ten c.m. in but one instance.

These facts, Wallack says prove that it is the defective presentation of the head that cause the dystocia much more than the respective dimensions of the head and pelvis. As regards the results in Wallack's nineteen cases they are as follows: In the twelve cases not treated by symphysiotomy, there was a maternal mortality of two or 16 per cent. The fatal results having been due in one instance to rupture of the uterus after intervention of the forceps and in the second to uterine rupture following version. Seven of the children died or fifty-eight per cent. Study of these cases shows the danger of manual intervention, of reduction and the uncertainty of the result when one begins with forceps or a version in these cases. Of seven the cases treated by symphysiotomy, there was no maternal mortality, and a fetal mortality in two cases or twenty-eight and five-tenths per cent. These figures are certainly indicative of the superior results attained by the use of symphysiotomy in cases of this kind.

While it may not be becoming in one who has only had one case to express opinions as to the technique of the operation, I will venture to express some for the purpose of eliciting discussion. My operation though made in the median line was evidently an extra median symphysiotomy the joint being most frequently found according to those who have carefully investigated the matter to one side or the other of the median line. What we supposed to be the ossification of the joint was the result of our not having found it. This, however, I do not regret, as I believe

that better union resulted from the division of the bone than from incisions through the joint. If it ever became necessary for me to do this operation again, I should choose the extra-median symphysiotomy as done by Gigli and make use of the Gigli saw. Vande Welde, who writes of this operation in the "Wiener Klinische Wochenschrift" for September, 1903, had only been performed twelve times up to April, 1903, all the mothers recovering with perfect gait. The Gigli saw was used in all these cases according to the method described by Gigli in the bulletin of the Italian Society of Obstetricians and Gynaecologists. He makes an incision from the spine of the pubis obliquely downward to the point where terminates the pubic ligament. It is not necessary to expose the bone completely. The upper edge between the two recti and a strong needle is inserted between the bone and passed downward guided by the finger in the vagina until the tip emerges at the lower angle of the incision in the soft part. A thread is passed through the eye of the needle and the wire saw is drawn through beneath the bone by this means. No vessels will require ligating.

In the absence of the hammock suspension bed described by Ayers, Vol. 36, American Journal of Obstetrics, I can commend most heartily a simple pelvic sling suspended from the ceiling and attached to a compound pulley such as used in suspending patients upon the application of the plaster paris jacket. Indeed in the after care of the patient I deem such suspension almost indispensable to her comfort and to facilitate the work of nursing.

Discussion.

Dr. Henry F. Lewis, Chicago: Mr. President —I think the essayist is to be congratulated on the good results obtained in his case, and on the fact that he selected as the alternative symphysiotomy. His case was similar to one seen jointly by Dr. Denslow Lewis and myself; the patient was operated upon by us, and the case reported by me in 1901, in a symposium on dystocia, which was then given before this Society. It was a similar brow presentation, with chin posterior and impacted. I believe symphysiotomy is preferable to the only other alternative, craniotomy in such a case. Caesarean section is out of the question after the head becomes impacted in the pelvis. In our case the child is living. I do not know whether the essayist said the child was living in his case or not.

Dr. Montgomery: It was.

Dr. Lewis: There can be no question but that the danger of symphysiotomy to the mother is greater than that of craniotomy; but I think, as the essayist has said, most women would prefer to take the added risk than to have the absolute certainty of a dead child, that is, assuming that the child is living, or that we do not know the child is dead. Dr. Montgomery did not state how delivery took place afterwards. He put on forceps, I suppose, and the chin rotated anteriorly as it did in the case we had. The symphysiotomy gave room for the anterior rotation of the chin.

I am very glad to have heard another case like this reported, and am extremely pleased to have had the opportunity of listening to the doctor's excellent paper.

Dr. Albert Goldspohn, Chicago: I have once before in a discussion reported a case of symphysiotomy which was done some five years ago under rather extreme conditions. The patient was a badly deformed individual, with very much contracted pelvis, who had been treated by medical men who were not surgeons in an attempt to induce abortion or premature labor for a month. These attempts were not successful, and then several others tried to deliver by forceps. The reports that I received in regard to the case were that the patient had been anesthetized three times, and an attempt with forceps had been made twice, with rather undue force. I saw the patient at about two in the morning, when she had a temperature of 102° per rectum; pulse 140, with the soft parts so edematous as to really efface the normal anatomy of the parts in this region, and I was prompted to do a symphysiotomy. At this time symphysiotomy was more talked of and in favor than it is now by obstetricians. The operation was not particularly difficult. There was some hemorrhage, which was controlled without any uncertainty. The delivery was easy, with a separation of the symphysis of about two to two and a half inches, the spread being limited by a strong assistant who held the pelvis together. The child lived two hours after the operation. The mother recovered.

She had as good a walk as she ever had before the symphysiotomy. The symphysis was wired.

In the discussion of this case heretofore, I was criticized by some obstetricians who contended that it was not a case for symphysiotomy; that perforation should have been made, and yet I have not been able to see the force of their criticism. If I had had any positive knowledge that the child was dead, then perforation would have been indicated. While I could not make out that the child was living from the condition of things, as the fetal heart could not be heard, yet I had strong reason to think that the child was living and it proved so. The cause of death of the infant, as autopsy afterwards revealed, was a laceration of the longitudinal sinus that someone had made who had applied forceps with undue force. So

in the absence of this injury from the forceps. I think the child could have recovered also. In spite of the criticism of that case, I have the firm conviction that if I had done abdominal section or vaginal Caesarean section, I would have a dead woman, considering the extremely bad condition she was in when I took hold of her.

REPORT OF THREE CASES OF PENETRATING WOUNDS OF THE CHEST, INVOLVING THE DIAPHRAGM AND ABDOMINAL VISCERA.*

BY DANIEL H. WILLIAMS, M. D., CHICAGO.

The following cases are of interest as they present some of the types of penetrating wounds of the chest infrequently met with, and departures in treatment not generally advocated.

The first is a gunshot wound, the ball striking the eighth rib, perforating the diaphragm, bisecting the left kidney from pole to pole, cutting the ureter and trunk of the renal artery, and lodging in the erector spinae muscles.

G. D., Irish, age 24. Admitted to Provident hospital, July 29, 1902, 10 p. m. Shot in the left side while stooping over. Examination on entrance, temperature 97°, pulse 88, small and compressible, skin pale and cold, with profuse diaphoresis, marked dysponea and apnoea.

Complained of pain on inspiration, over the left side of the chest. Blood oozing from wound in eighth intercostal space, two and one-half inches anterior to the left mid axillary line. Vomited frequently until anesthetized. Heart, pericardium and large vessels negative as far as could be learned. Dullness below third intercostal space.

There were no indications of injury to the diaphragm or abdominal viscera, and from the fact that he had been shot through the eighth interspace, would almost exclude abdominal complications. Balls do not turn corners unless they come into contact with some hard substance. The ball had passed through the eighth interspace, and it was fair to conclude that its course would vary but little from a straight line. The omentum had plugged the wound in the diaphragm, and the abdominal and pleural spaces were temporarily normally separated.

Following the practice of examining the urine of all emergency patients, while on the table, it was found that the bladder contained twelve ounces of bloody urine. This directed attention to the kidneys and abdomen. Examination of the abdomen showed muscular rigidity on the left side, and absolute flatness from the twelfth rib into the flank, and the absence of abdominal respiration, a very important sign in men of a peritoneal lesion.

The bladder was washed out, and a second catheterization made, and blood found again. As only one ball had entered the body it was concluded that the abdominal viscera had been injured through the wound in the eighth interspace, and operation was indicated.

Operation. Incision followed the angle of the eighth rib, five inches long, tissues raised and retracted, sub periosteal resection of about three inches of the seventh and eighth ribs. This gave ample space to reach any part of the diaphragm.

The wound in the diaphragm was treated by a purse string suture of silk, after the manner suggested by Senn in perforating wounds of the stomach. Over this a continuous Lembert suture. The pleural cavity was irrigated with a salt solution, wound closed, and the air aspirated with a Davidson syringe. At this point the treatment of traumatic pneumothorax forces itself into prominence as a factor in estimating the result of the case in hand. In some cases the symptoms from this condition are grave, in others mild. The aspiration of the air from the cavity, a good firm straping of the chest with plaster, have eventuated in all of my cases in success.

Following out the investigation of the perforating wound in the diaphragm, an incision seven inches long was made to the left of the median abdominal line. The intestines and organs were examined with negative results, excepting a bullet wound in the upper inner surface of the kidney. This was closed with continuous suture of catgut, with

*Read before Chicago Medical Society, June 16, 1904.

the idea of protecting the peritoneum from infection incident to any procedure on the bleeding kidney. An oblique incision was made in the left loin, for the purpose of investigating the kidney. When the lumbar fascia was reached it was found bulging into the wound, and the space dark with extravasated blood. On incising the lumbar fascia, there was an escape of dark clots, followed immediately by profuse arterial hemorrhage. Temporary deep pressure by tamperature 98°, pulse 92, good quality. Complained of pain in, and about the wound, and in the left abdomen. Short, shrill, hacking cough. Unable to lie down. Extreme dyspnea, due to pulmonary collapse. Slight cyanosis. No hemorrhage from wound, on account of valve action of its margins. Heart normal. Dullness over the left abdomen. Slight muscular rigidity. No positive signs of hemorrhage into the abdomen.

Case I.

pon controlling the hemorrhage until the kidney was separated from its surrounding fat, and followed down to the ureter, which, with a large trunk of the renal artery was found to have been cut by the ball. The kidney was removed. He made a slow but perfect recovery, and remains well more than a year after.

2d. Stab wound of the chest, through the eighth interspace and diaphragm, and into the spleen. This case adds one more to the very few recorded of successful suture of the spleen for traumatic hemorrhage.

Patient, Alfred C., age 27. Admitted to Provident hospital, July 30, 1902. Discharged well, August 30, 1902. Was asked to see and operate upon him by Dr. A. W. Williams. Examination on admission, temperature 98°, pulse 92, good quality. Complained of pain in, and about the wound, and in the left abdomen. Short, shrill, hacking cough. Unable to lie down. Extreme dyspnea, due to pulmonary collapse. Slight cyanosis. No hemorrhage from wound, on account of valve action of its margins. Heart normal. Dullness over the left abdomen. Slight muscular rigidity. No positive signs of hemorrhage into the abdomen.

At this examination there were no indications for immediate operation. This was one of that class of cases usually treated on the expectant plan, and always results in death. From this case, which proved the most interesting and instructive that I have ever met, many useful lessons have come.

After watching the patient for an hour, I concluded to operate on the progressively urgent indications. The pulse had increased from 92 to 140, with lessened tension. Profuse diaphoresis, increased dullness in the left abdomen, with extreme muscular rigidity, and a leucocytosis of 3000, his symptoms all pointing to active hemorrhage.

Operation. Incision following the angle of the eighth rib, retracted over the ninth, resection and method the same as in case one.

The wound in the diaphragm was one inch in length, and firmly plugged with omentum; this was reduced by clamping with a pair of forceps, and carried into the abdomen.

Wound in the diaphragm was closed, also the costal resection. The skin incision was extended downward over the left lateral abdominal wall, into the cavity of the abdomen, which was found full of clots and free arterial blood.

Slight traction on the gastro-splenic omentum enabled me to deliver the spleen on to the abdominal wall for examination. It bled profusely from an incised wound extending from the phrenic to the lower part of the organ. To control the hemorrhage, a turn of gauze with a drawn loop, was put about the pedicle. Here I was confronted with a bleeding spleen. How should it be treated?

My first attempt at suture ended in complete failure by tearing out as I endeavored to draw the suture down. I therefore changed my method by selecting a full curved, round, Mayo needle threaded with No. 2 catgut. This I introduced one half inch from the margin of the wound edges, and without the least force, allowed the needle to follow its full curve, emerging from the opposite side of the wound the same distance as it entered, and making a triple loop without a re-enforcing knot. Hot gauze compresses were held on each loop as the edges were approximated, with the idea of causing the catgut to swell and engage opposing fibres, so as to make a firm line. Every suture put in this manner held firmly. After watching it for twenty minutes I returned the spleen to the abdomen, and surrounded it with omentum, a very important part of the detail, on account of its well known property of protection. The patient made a rapid and permanent recovery. He left the hospital in three weeks.

3d. This case is added to show the variance of penetrating wounds of the chest. This special type of penetrating wounds below the fifth interspace on either side, should impress itself as a most formidable and usually fatal injury. They are wounds that it is positively impossible to diagnose until perhaps it is too late, without an exploratory incision, and an exploratory incision here, is just as necessary as it would be in a stab wound of the abdomen.

J. P., age 30. Referred to me by Dr. A. B. Schultz. Stabbed July 30, 1903, through the sixth interspace, one inch anterior to the nipple line. Temperature 97°, pulse 110, fairly full and regular. Respiration 40, skin cold and clammy. Heart and lungs negative, except below the sixth rib, from which dullness extended downward to the tenth rib. Abdomen negative, arterial blood escaping from the intercostal vessels. As we could get no reliable history of the extent of the wound, exploratory operation was decided upon. Incision four inches long, following the curve of the sixth rib, retraction of tissues, and subperiosteal resection as described in case one.

On opening the pleural cavity, the patient was dangerously cyanosed on account of the pulmonary collapse, and inability of the right heart to accommodate itself to the emergency.

Two perforating wounds of the diaphragm one on the outer or pleural side near the dome, and one in a direct line on the inner or pericardial side were found. Also an irregular wound of the pericardium. No injury to the heart. The diaphragmatic wounds were treated with purse string silk suture, over this, a continuous Lembert. The opening in the pericardium was united with fine silk, the pleural cavity irrigated, and the costal opening closed. I continued the incision below the diaphragm, and carefully explored the abdomen finding a punctured wound of the transverse colon. This is the only safe practice following penetrating wounds of the diaphragm.

The findings in this case, without symptoms special to any organ or viscera within stabbing distance of the walls of the thorax, again impresses one with the necessity of investigating selected cases of penetrating wounds of the thorax. Had not this case been early operated upon, it is fair to presume that the patient would have died. He recovered.

THE PNEUMONIA PROBLEM.*

BY ARNOLD C. KLEBS, M. D., CHICAGO.

The very prevalent impression among the profession and laity, that the death-rate from pneumonia has of late reached most threatening dimensions, has induced me to study the facts at hand more closely and I have reached certain conclusions, previously reported (American Medicine, Vol. VI, No. 24, and Illinois State Medical Journal, Nov., 1903). I pointed out then that a comparison of the total death-rates only of successive years had very little value and that it was absolutely necessary to analyze the distribution of deaths in the various age groups and for the two sexes. In comparing the death-rates in the various age groups given by the two census years 1890 and 1900, I found that a very considerable increase of the death-rate from pneumonia had occurred in early childhood (especially under one year of age) and also in old age, but that there was a decrease between the ages of 5 to 65. This same astonishing result I found also in comparing statistics from American cities and from abroad, in fact this condition seems to be existing everywhere to judge from the statistics from places far apart; of course in a more or less pronounced degree. The point that the increase from pneumonia affects only those under five and above sixty-five years of age has not been realized at all, which in view of its very great importance is rather astonishing.

It is of course evident under these circumstances and I called attention to it, that when we speak of the pneumonia death-rate, this does not throw any light whatsoever on the death-rate from croupous, fibrinous pneumonia. The term pneumonia embraces broncho-pneumonia and capillary bronchitis and probably other ill-defined pathologic conditions of the respiratory organs especially in childhood and old age. It is therefore evident that in speaking of a pneumonia problem, the underlying factor is not one disease but several, which have in common chiefly the location in the respiratory system and certain symptoms of an acute infectious disease. Furthermore I showed that the prognosis of croupous pneumonia in childhood being very good, this disease could not be responsible for the increase of the mortality at the ages under five. Other observers (Townsend and Coolidge, Mays) have also shown at the hand of hospital and general mortality statistics that the apparent increase in the death-rate from lobar pneumonia is deceptive for various reasons. I showed that the average death-rate from this disease in hospitals was 22.3% (Fraenkel in his recent work gives 22.6% for his hospital) which considering the fact that the worst cases are sent to the hospitals and often late, does not speak for a great malignity of the disease, which is also borne out by the much lower mortality figures reported from private practice and military hospitals.

Since the publication of these investigations Ascher published the results of his very thorough study of similar conditions in Prussia (Berliner Klin. Wochenschrift, 1903, No. 44). He also noted the very marked increase of the mortality from acute respiratory diseases in childhood and old age and the corresponding decrease from tuberculosis in these age periods. Already before Ascher's essay came to my notice I had concluded that in order to have a full understanding of this so-called "Pneumonia Problem" it was necessary to study the death-rates from all acute respiratory diseases in the various age groups and the two sexes. I have therefore computed for the five last census years 1860, 1870, 1880, 1890 and 1900, for both sexes and for the various age-groups the death-rates per 10,000 population from non-tuberculous respiratory diseases, and from tuberculosis. Following Ascher I will call the former N. T., viz. non-tuberculous respiratory diseases and T.=tuberculosis, the sum being T.+N. T.=all respiratory diseases viz. acute and chronic. The group N. T. comprises for the years 1900, 1890, 1880 and 1860 the following: "Pneumonia, laryngitis, bronchitis, pleurisy, croup and asthma and other respiratory diseases" for 1870 "hydrothorax" in addition. The group T. includes "Consumption and scrofula."

*Read at the 54th Annual Meeting, May 17, 1904.

The comparison of the two groups of the acute and chronic type seemed to be especially indicated on account of the opinion which has been expressed that the problem of pneumonia has superseded that of tuberculosis. Such opinion is necessarily based upon the fallacious argument induced by a comparison of the total death-rates only. It does not take into account the fact already alluded to that pneumonia is a fatal disease chiefly in childhood and old age, while tuberculosis is extremely fatal in adult life and which is of the greatest importance, that it disables its victims for a very considerable period before death. It must therefore seem that if pneumonia is to supersede tuberculosis as the principal cause of death this could only be a boon to humanity. If all those that now die of tuberculosis were to die of pneumonia the economic loss would be infinitely smaller.

The statistical comparison of tuberculosis with non-tuberculous respiratory diseases gives very similar results as those previously made with pneumonia. The age curve (Chart I) see page 361. [This chart, by its heading, is erroneously attributed to the paper of Dr. Webster for the acute diseases] (N.T.) shows for 1900 and I may say here that the conditions are the same in other years, an enormous mortality under one year of age. From that highest point the curve rapidly descends, reaching its lowest point at the ages of 10 to 15 years (the curve for females being slightly lower). Then it very gradually rises to the ages of 50 and 60 years from where it ascends rapidly again to a point almost as high as that in childhood, the female curve being somewhat higher. The curve for tuberculosis begins with a descent from the somewhat higher points in early childhood to its lowest point, the same as the N. T. curve at the ages of 10 to 15, from where it ascends quite rapidly, remaining at a level (female higher) during the adult age period, ascending some more beyond 60 years. This curve very admirably illustrates the fact well known to statisticians and pointed out by Ascher, that the resisting power is greatest during school age and decreases in a constant ratio towards the infantile and old age period. It also shows a fact not at all understood, the enormous mortality from non-tuberculous respiratory diseases in early childhood and old age. The grave danger which tuberculosis exerts in adult life in spite of a constant decrease in its general death-rate is also demonstrated.

For the purpose of studying the differences in the death-rates from the two groups of respiratory disease I have drawn curves (Chart II) see page 369. [This chart is erroneously attributed by its heading to the paper of Dr. Webster] representing the increase and decrease in percentages between the years 1860 and 1900. The curves show an apparently constant inter-relationship of the two disease groups. Throughout the different age groups we note that, firstly the two groups of respiratory diseases have distinctly decreased at all ages, except below 3 and above 70 years of age; secondly that the curve for non-tuberculous respiratory diseases follows practically the same course, only in a more exaggerated degree and thirdly, that the tuberculosis curve, although showing a decrease in almost all age groups does so to a distinctly lesser degree in adult life, there even having been an increase between the ages of 15 and 35. We are therefore forced to admit a constant inter-relationship between the death-rates of these two diseases, viz., as tuberculosis decreases the other respiratory diseases increase, and the decrease of the one takes place in the same age periods where there is an increase from the other. That the death-rate from non-tuberculous respiratory diseases (the group of pneumonia is about 75% of these) will within appreciable time assume such proportions as to threaten uniformly all age periods and especially adult life seems most improbable from a careful analysis of a great many figures from various sources at hand. But the distinct increase of the death-rate in childhood merits attention and its causes should be studied from various points of view.

In this direction no progress will be made as long as total death-rates merely are compared and as long as those whom we have put in charge of the public health use inadvertently such sensational phrases as the

"murderous" pneumonia season and the "frequency and fearful destructiveness of pneumonia," causing general fears without even attempting to investigate underlying conditions, which may be of help in the improvement of the conditions. It is on the necessity of further investigations on this subject that I wish to lay emphasis. I have only been able to investigate and give you some important facts which merit consideration, but a great many other factors especially social ones will have to be studied before we can receive definite suggestions as to preventive methods.

The study of these figures and others brings forth one rather discouraging fact, that in the treatment of respiratory diseases we have not achieved great results. Townsend and Coolidge have already demonstrated by their investigations of the results obtained by the various methods of treatment employed at the Massachusetts General Hospital in Boston, that through the 64 years the mortality-rate of pneumonia (lobar) has not been influenced under heroic treatment before 1850, transitional between 1850 and 1860, and expectant and sustaining since 1860.

On the other hand an attempt has often been made to explain the reduction of the death-rate of tuberculosis to the enforcement of direct preventive and especially anti-bacillary methods. In view of the fact that this reduction began before the period of specific preventive efforts, such conclusion can only be partially true, and it is much more likely that the general economic improvement and better domestic hygiene are more directly responsible factors, which in future efforts must not be neglected. The solution of the "Pneumonia Preblem" is in my opinion not to be found in those anti-bacterial measures only, for which some health authorities clamor with an energy worthy of a better cause. The fact which I believe I have first demonstrated in this country, that the increase from pneumonia falls into early childhood and old age ought to direct specific preventive efforts. By what methods this is best done only further investigations into the indirect causes may suggest.

Discussion on Dr. Klebs' Paper.

Dr. N. S. Davis, Chicago: I wish to say only a few words in regard to the chart showing the mortality, according to ages, from nontubercular diseases. The ground line in this chart is almost precisely the same as that of pneumonia as platted from the census statistics. It represents in our line the two varieties of pneumonia, the croupous and the catarrhal. The largest number of cases of catarrhal pneumonia occur under ten years of age, and the greatest proportion of croupous pneumonia occurs after that age. If we eliminate the statistics during that first period, we have a line that is more nearly correct for croupous pneumonia. If we get the statistics of the two varieties separated, I am sure that we will find the line in the earlier years of childhood not so high as is shown on the chart.

A friend of mine recently sent me a copy of a paper which has not yet appeared in print, and which is very interesting to me. He corrected the curve of pneumonia by determining the ratio of deaths in each decade, to the number of individuals living in that decade. When corrected in this way death rate during the period of adult life is much more uniform and there is not such an abrupt rise during the earlier years of life.

Dr. Klebs, closing the discussion: That curve was calculated according to the population living at that time, that is, at those ages. The three curves are calculated on that basis, which is the only reliable calculation, one based on ten thousand population living at a given age.

REPORT OF COMMITTEE OF ARRANGEMENTS FOR NEXT ANNUAL MEETING.

Rock Island, Ill., Aug. 24, 1904.

The committee on arrangements for the meeting of the State Society which is to be held here next May, held their first meeting Aug. 23d. The committee was called to order by Chairman Dr. Bernhardi. Dr. Craig was elected vice-chairman and Dr. First, secretary and treasurer. All members of the committee being present except one; the chairman was authorized to organize the committee as he thought best.

The chairman then appointed; as chairman of the several sub-committees:

Halls and hotels, B. F. Hall.
Exhibits, E. M. Sala.
Transportation, S. B. Hall.
Finance, J. DeSilva.
Advertising, etc., W. H. Ludewig.
Lady Physicians, Emily Wright.
Entertainment, J. R. Hollowbush.
Reception, G. G. Craig.

Dr. Weis of Ottawa being present, outlined the work of each committee.

After the meeting Dr. Weis was taken out on a tour of inspection of the halls where the meeting will be held and pronounced everything firstclass, with all the room we could use.

When it comes to hotel accommodations we are unlimited and will expect every physician in Illinois to attend the meeting.

F. H. First, Secretary Committee.

The Illinois Medical Journal.

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NEXT ANNUAL SESSION, ROCK ISLAND, MAY 16, 17, 18, 1905.

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PUBLIC SCHOOL TEACHERS AND TUBERCULOSIS.

The state educates the child and affords the means for training the teacher for the benefit of the commonwealth; by so much as the teacher contributes to the advancement of the public is the state compensated; but the state makes no attempts to clothe, shelter or maintain these servants like it does the volunteer integers of its army and navy. No commissary provides them a carefully studied "balanced ration," by which their highest efficiency can be maintained, while shelter and raiment are obtained by most searching economy; no trained and commissioned surgeon-major directs and compels their hygiene, but they are left in the mental and physical battle for the "survival of the fittest," not only with their struggling fellows and peers, but with the invisible but ever present foe of infectious and communicable diseases with which the army of "infantry" in which their line of duty directs their services is always too well equipped.

It has always seemed an incomprehensible paradox in the human family and in the plans of the state that not as much attention is paid to the fundamental physiological principles of the origin and existence of the species *homo* or its preservation as there is to the cattle that roam its plains.

A counter-charge may be made that physicians have only recognized anthropology as the latest of sciences, while biology is only its brief antecedent; this remissness may be accounted for in the great concern for the re-

mote future, its rewards and punishments, which occupied the minds of the pulpit teachers and diffused itself throughout the populace until they learned to breathe a constant TeDeum and knew more of the dimensions and decorations of the heavenly chambers than they did of the "breath of life" or their "house not made with hands."

Thus a knowledge of anatomy or interest in the simple processes of physiology seem the *bete-noir* of the school teacher, while biology is also too often a strange, strange land.

Compulsory teaching of fanatical physiology is a bane that should be speedily eliminated for rational, pedagogic and *scientific* physiology. The constant primal phenomena of gestation, respiration, circulation and digestion of present existence should be the beginning of wisdom for the school teacher; without these fundamentals of knowledge no teacher can be a salvation unto herself or himself, neither can she impart the beautiful and necessary lessons of health and life to those entrusted to her care. Good physique as well as robust health should be both the heritage and posession of every teacher.

School boards may, by as much right, require a certificate of good health from an applicant for a teacher's place, made by a medical examiner other than the friend or family physician, as they have by custom and statute demanded intellectual requirements. Where such examinations have been called for sixty per centum have been declined or recommended for instruction or treatment; the deficiencies being mostly for respiratory incapacity or thoracic deformity, cerebrospinal anemias and irritation, and a few for ignorantly acquired pelvic diseases; such certificate is required in many other lines of public service, nurses, training schools, municipal fire and police, life saving, and military and naval service of the government.

The teacher with atrophic muscles of the neck and chest, drooping shoulders and arched neck is a moving witness of the absence of the laws of hygiene and an inviting and easy target for tuberculosis; if with this, as almost surely follows is an unstable nervous system, capricious or waning appetite, social and domestic environment must be indeed exalted and tranquil if the subject is not hurried into the ranks of the tuberculous or the neurasthenic. In such a subject daily tidal respiration of the shallowest kind goes on but little deeper than the involuntary and puerile breathing of sleep, with never a thought of a clean purge or a deep inspiration and exhalation to expand the distant alveoli and distend the leading bronchi and rid the distant area of the lungs of their residuary air and admit a fresh supply; a few deep inspirations and forced exhalations will clear the deep acini and dividing bronchi of much of the residuum and give triple the volume of new air again and as much more high vigor and potential resistance; respiratory exercises should be practiced by all teachers and taught all pupils with the same regularity and precision as meals and lessons.

That most female teachers are not such by choice and preference and natural and acquired equipment is an acknowledged infirmity of the corps. Teaching as a profession is rather the unstable bridge spanning the chasm between graduation and matrimony which they too timidly tread until the other eager shore is reached. To be or feel otherwise would be a futile denial of an organic law and sentiment of society and existence. This subtle factor of sentiment ever present, with the innumerable requirements and exactions of successful pedagogy, associated with the complex studies of psychology in self and pupil through all the grades, with

increasing complexions as grades advance, often compels the important material study of sanitation in the building to be regulated to the care of the untrained decrepit, politically appointed, and indifferent janitor with probably an occasional inspection by the hurried superintendent.

That teaching is an exalted enough occupation to gratify any ambition no one will have the temerity to deny. There are too many exalted attributes belonging to the teacher as individual and as community, and too many complex and arduous involvements in the teacher's occupation to ever lay successful or legitimate blame at their threshold.

Appropriations for grounds and buildings are necessarily limited; the selected or competitive architect, compelled to be over economic, seeks so-called beauty, and sacrifices sanitation for this, ignoring the old oriental saying that "where the sun and the air do not enter, the physician enters often." The present and most highly appreciated bacterial forces of *sunlight* and *fresh air* are unfortunately limited by the delusive parsimony of square feet in cities and square quarter acres in the country; neither of which economies is thoughtful, legitimate or economic in this imperial domain of Illinois, whose boundaries are a broad lake, the rushing waters of two grand trunk rivers, and innumerable serpentine tributaries draining by gravity and siphonage every foot of its terrestrial area, while winds from the Alleghanies and from the plains alternate to stir and sterilize its aerial strata; if rural and city board will furnish the landed space the Lord in His bounty will not fail to provide the bactericidal sunlight and fresh air. If municipalities cannot furnish this ground area, in suitable places, why not urge that some of the prodigal philanthropy that is lavished on public libraries and universities be bestowed on the public school grounds that the predisposed scholar and the wearied teacher may have these preventative gifts presented them, instead of erecting costly sanitoria to cure them when once ill. Our alms-houses and jails have more attention given their location as regards air area than have our public schools, while cities have almost bankrupted themselves to furnish salubrious sites for the still doubtful utility of the free libraries that have been donated them. We rail at the villainy of the sweat-shops and the sunless and crowded tenement and offer our teachers and helpless children but a little better sanitary habitation; millions are expended for parks and the school house is located on a side street or alley corner.

No comparisons of moneys expended for the *prevention* of the spread of tuberculosis can stand against the maintenance of pauper or municipal tuberculosis cases, or the loss of production through its prevalence. Impress school authorities whose vigilance is so commendable and intent against diphtheria, scarlet fever, small pox and measles, that tuberculosis annually claims as many victims as all four of these combined, and that the faithful teacher is the most exposed of all.

School authorities will find helpful allies in every true physician; in suspected cases of contagious diseases an early conference should be sought with the family physician and his aid invoked to direct, eliminate or suppress tainted cases whether in teacher or pupil; where the relations between patient and physician are such that the interests of both conflict with personal or public policy a disinterested medical commission should be secured, sufficiently compensated, and their opinion taken as decisive and final for that case. The teacher who has engaged in his

or her vocation and is equipped by both education and experience is too valuable to be sacrificed, and should have both surveillance and protection as much as the immature scholar.

There are endless unnecessary exactions imposed on the teacher that plainly belong to the parent; those pertaining to personal cleanliness and hygiene, such simple acts as keeping the nose clean, brushing the teeth and laving or gargling the throat; especially should children in and out of school be forbidden the habit of insufflation, as this aspires the secretions of the anterior nostril that should be respired or blown out as the retention contains the bacteria that find in the posterior nares favorable lodgment for growth and development, and feeds the adenoids and keeps the turbinates congested; wholesome respiration is the function to which least attention is paid, and yet the breath of man is more than meat and drink; it is the first thing we gasp for and the last we sigh for when we go hence.

For the enlightening of parents the school house should be made a community center for instruction by imported or local lectures.

"That which cometh out of the mouth this defileth a man," might as easily be applied to the exhalations and expectorations of everybody, tobacco users, as well as the tuberculous infected subject working and wandering among his family and fellows in every vocation and community.

Attitude, posturing, sitting and standing should be enforced in the school room; respiration should be taught as a lost art is taught; the zone above the diaphragm should receive as much attention as the one below it, and better form and better health would result to all; with teachers teaching it by both precept and example, their own health would be conserved, the children's advanced, less anemia with its attendant evils would exist, and the few hours spent in mural life to which so many ills are attributed and the many that are spent in the home and out of doors should accummulate only vigor, extend life and lessen the distance and diminish the target for the Great White Plague.

D. Lichty, Rockford,
President Board of School Inspectors.

THE DEMOCRATIC CANDIDATE FOR GOVERNOR CHARGES MISMANAGEMENT OF THE STATE INSTITUTIONS BY REPUBLICANS.

The Hon. Lawrence Y. Stringer expressed his ideas on the subject of State Institutions at the Chautaqua at Old Salem near Petersburg, Thursday, August 18th. As the subject of his address is of especial interest to medical men, we give the following extensive quotation without comment. It is evident that this matter will play a large part in the coming campaign:

To build, equip and properly maintain the charitable institutions of the state has cost much in treasure. But whatever the cost, no tax is paid more willingly by the people of the state, and they are not so much concerned as to the amount appropriated as they are concerned as to whether the taxes raised for such purposes are properly and economically expended and are devoted, singly and solely to carry out the objects for which these institutions were built. And here let me say, with all the energy I can command, that whatever their objects may have been or are, they were never intended to be prostituted to political ends or made hatching grounds for political schemes or headquarters for political clubs.

The spoils system that has fastened itself of late years upon the body politic of the state is subversive of discipline and inimical to the interests of the wards of the state. However competent a superintendent may be, under this system he is powerless to bring about results, enforce obedience or manage his institution with success. Called to account for his misdeeds, the subordinate insolently replies that he gets his place from a power as high as the superintendent, that he regularly contributes to the common campaign fund and that his ability to perform the delicate work assigned him, not for his zeal, industry or caution, but as a reward for political services rendered and the political influence he still wields. The general service thereby suffers, discipline is destroyed, the wards of the state are neglected and abused,

the money of the taxpayers is frittered away and general demoralization ensues.

Favors Merit Law.

The remedy to my mind is the enactment and enforcement of an effective merit law, applicable not alone to the charitable and correctional institutions but to all departments of the public service of the state. The attendants in the asylums, the inspectors and helpers in the grain offices, the guards in the penitentiaries have nothing to do with the tariff, high or low, the coinage of silver or gold, the Panama canal or the far-off Philippines. Their work is a business proposition, appeals alone to the business sense and should be as devoid of politics as purely business propositions are.

In four sessions of the legislature, two in the senate and two in the house, I have advocated every measure looking toward state service reform. In the last session of the senate I supported the civil service bill with voice and vote, only to see it strangled in the house of its reputed friends. In the presence of this audience, and through it the entire electorate of the state, I solemnly promise and declare that if elected governor of this state I shall use every energy and power that I can command to secure the passage and enforcement of a state merit law. And if such a law cannot be and is not passed, I further pledge myself to administer the affairs of the several boards and institutions of the state in accordance with the well known principles of service reform.

Heroic Remedy Necessary.

The disease being spoils and the remedy state merit reform, it is evident that such can not be secured by the retention in power, in whole or in part, of the present political machine. It has naught to proffer but the infection to cure the disease. The grievances to be redressed are those alone which it has caused. Its promises are overworked and overworn by continual service in recurrent campaigns.

The remedy must be heroically applied and the change radical, complete and sweeping. No half-way policies will avail. The spoils system which has fastened itself upon the service of this state is not a mere infection or a ten days disease. It is a cancer, malignant and putrid, eating its way into the vitals of the body politic of the state. Salves and ointments and outward applications will not suffice. The surgeon's knife, a new surgeon and a new knife, is needed to cut down deep into the roots of the sore and extract every vestige of putrefaction.

Obligations of the State.

The great institutions of this state were not intended to be merely custodial. It is not enough that the reason-bereft or the child of feeble mind should be held in durance that society may be protected. The old-time "bedlams" did that. It is not enough that they be provided with food and clothes and shelter. They have a higher claim, the claim of humanity. They are entitled to the best scientific and expert skill that can be secured, that the fever of their brains may be assuaged, their rioting pulse calmed and their sufferings relieved. They are entitled to gentleness of touch and the warm-hearted sympathy of broad minded attendants.

But such things can never be under a system where superintendents are appointed for political generalship, attendants for their work at primaries and polls, employes for the alacrity with which they contributed and advisory officers farm out the lives of dependent people as patronage to the faithful few and dictate appointments on the basis of political pull.

It is true we are in the midst of a presidential campaign and national issues are involved, but these issues sink into insignificance compared with the issues arising from the care, the recovery and the lives of twleve thousand unfortunates in our institutions of state, of whom you, the people of Illinois, are the God-appointed guardians. These issues appeal directly to the hopes and hearts and homes of common humanity.

ILLINOIS POLITICS AS SEEN IN OHIO.

The following editorial appeared in the Cleveland Medical Journal for August, 1904. The writer is evidently well acquainted with the state of affairs in Illinois and has written forcibly regarding them:

THE CONSEQUENCES OF A GOVERNOR'S INTERFERENCE WITH STATE INSTITUTIONS.

The lesson that our profession is striving to impress upon public officials as to political non-interference with public eleemosynary establishments seems not to have been learned by the present Governor of Illinois. Since this executive came into office he appears to have selected the State institutions, and especially the State hospitals, as the objects of his predaceous political ambitions. He invaded the State Board of Charities to place an obnoxious political secretary, thus mortally offending and forcing the resignation of two members who had for years adorned that board as prominent American charities workers. By the time his term—and we are thankful to record that it will be his last one—shall have expired, practically all the State hospitals in Illinois will have undergone reorganization according to the Yates political plan. As a result of this odious administration, honorable and competent trustees, superintendents, assistant physicians, executive officers, and employees have been compelled to relinquish their charges, and the State hospitals of Illinois have been plunged into a

state of retrogression not to be entirely remedied by ten years of careful after-treatment.

Be it said, however, to the credit of the physicians of Illinois that this sad spectacle did not pass them unnoticed. The early murmurs of disapproval became protests, and, as the abuses continued, these protests became more vigorous with the better organized condition of the Illinois profession. Finally the indignation reached the point at which the doctors determined to combine and campaign against the Governor of Illinois. To this end the Illinois State Medical Society and that powerful municipal organization, the Chicago Medical Society, entered the field. Throughout the struggle the Illinois Medical Journal, the official organ of the State Society, has performed estimable service, particularly by the series of valorous editorials concerning the Governor's degradation of the State institutions.

There is, therefore, abundant evidence that the medical profession of Illinois carried on a most active opposition to the Chief Executive. How effective this opposition was in securing the defeat of Governor Yates for renomination is difficult to determine at this distance, but we believe it must have been at least a factor. The active antagonism of two or three thousand well-organized and thoroughly indignant physicians in a given commonwealth is surely a force to be reckoned with, and it must have had its share in causing the Governor of Illinois to fall prey to his narrow and selfish political machinations. It is a force which will claim the respectful attention of far-seeing politicians, and one that will in time purge our charitable, benevolent, penal, and medical public institutions of the blight of partisan political interference and intriguery.

LEGISLATION AGAINST TUBERCULOSIS IN MARYLAND.

Through the efforts of the Tuberculosis Commission of Maryland, the legislature has passed an excellent law which has received the approval of the Governor. This provides for a compulsory notification of cases and deaths under penalty of a fine. Fumigation of an infected house, on the part of the landlord, before it can be again let, is also made compulsory of $25 if the law is not complied with. This legislation places Maryland in the front rank in the crusade against tuberculosis.

THE OTTAWA TENT COLONY.

The committee on tuberculosis have been busy since their appointment making plans for active campaign during the fall and winter. Inasmuch as no systematic attempt has thus far been made in this work to organize a state, we have no precedents to guide us.

We have decided to make the committee more representative and as we believe, effective by enlarging the membership. We are endeavoring to interest every important social factor including the press, clergy, women's clubs, business men, teachers, labor unions, politicians, etc., etc., by giving them representation on the committee. We will probably be ready to announce the names of this committee by September 1st.

The Ottawa Tent Colony was opened July 1st for the reception of patients. It is confidently expected that we will be able to make this self-sustaining. There are now 22 patients undergoing treatment. Those who have been under treatment for two weeks or more show improvement—some of them very decided. One patient gained 16 pounds in three weeks; another, 15 pounds in five weeks. The average gain last week for all the patients was 2 1-4 pounds. With the improvement in flesh there is a decided improvement in all other symptoms.

The patients are as a rule contented and no difficulty is experienced in securing their co-operation in carrying out the rules and regulations necessary to the success of the treatment.

Notwithstanding the expressed stipulation that advanced cases will not be admitted,

several such patients have been sent. No case is admitted except on the statement of a physician that the disease has not advanced beyond the second stage. We earnestly hope this very essential regulation will be more carefully observed in the future.

Physicians and others interested are cordially invited to visit the Tent Colony and see for themselves the work we are doing.

J. W. Pettit,

Chairman of Committee on Tuberculosis.

THIS SPECIAL TUBERCULOSIS NUMBER.

This issue of the Journal we believe will be found especially interesting to our readers because it contains the complete symposium on Tuberculosis read at the annual meeting now printed in its entirety for the first time. These papers were written by masters and two of them are illustrated by charts concerning the disease as it exists right here at home. In order to get all the plates on a better quality of paper it was necessary to separate them to a certain extent from the papers where they properly belong but the headings will designate them. There are two exceptions to this rule. The diagrams on pages 361 and 369 should be assigned to Dr. Klebs, by mistake they have been assigned to Dr. Webster. Besides the original articles there is a valuable signed editorial on Tuberculosis and school teachers, the rules promulgated by the Phipps institute for the study, treatment and prevention of Tuberculosis, also the rules promulgated by the German Imperial Board of Health. The Illinois State Board of Health has recently issued a valuable pamphlet which is only omitted because of its length and because it has been already placed in the hands of our readers. Associations for the prevention and cure of Tuberculosis are being formed over the State, (see report from Peoria) and Dr. Pettit reports favorably from his camp colony for the treatment of the disease. On all sides we have evidences that the profession and public are waking up to the importance of this subject and wonders are sure to be performed in the near future.

News Items.

Dr. Geo. H. Rue, of Lexington, has removed to Taylorville.

Dr. H. T. Duffield of Pittsfield and family are traveling in Europe.

St. Francis' Hospital, Evanston, netted $1400 from the lawn fete recently given.

Dr. M. D. Foster, of Olney, has been nominated for Congress by the Democrats.

Dr. E. J. Doering is spending the summer with his family at Venice and the Italian lakes.

Dr. Edward T. Alford, 70 E. 36th st., Chicago, recently returned from a nine months visit in Europe.

Dr. J. A. Wheeler, of Auburn, has been elected secretary of the State Republican Central Committee.

Dr. Jasper Tidball of Grafton has been elected chairman of the Jersey County Republican Central Committee.

Dr. Howard Metcalf a recent graduate from Northwestern University has located at the corner of 5th and Monroe streets, Springfield.

Cass County Medical Society has adopted a uniform scale of prices in order to do away with the evil of over-charging for medical services.

Dr. John Cole of Williamsfield, Knox county, has been placed under arrest charged with performing a criminal operation and is held on a $10,000 bond.

Dr. J. A. Settles, formerly of Kilbourne, recently wandered from his home at Yucon, Okla., and was found in Chicago, his mind is thought to be affected.

Dr. S. L. Chapin, of Saybrook, was fatally shot on the night of August 18th by a Mr. Wilkinson who lay in wait for him. His assailant is probably insane.

Dr. J. W. Bowling has been appointed local surgeon for the B. & O. and L. & N. railroads at Shawneetown, filling vacancy caused by the departure of Dr. Barton.

Dr. Norman Dixon Curry of Springfield, namesake and student of Dr. J. Norman Dixon, after a two years course in the hospitals of Europe, has located in Chicago.

Dr. George W. McComas of New Canton has filed in U. S. District court a petition in bankruptcy, his indebtedness is placed at $1,902.57 and his assets at $3,225.

The Illinois State Board of Health has secured a room in the Odd Fellows' Building, Springfield, where a laboratory will be estab-

lished for the investigation of diseases of the epidemic type.

The Annual Meeting of the Mississippi Valley Medical Society will be held in Cincinnati, Ohio, October 11, 12 and 13, 1904. Dr. H. T. Patrick of Chicago will preside and desires to see a large representaion of Illinois doctors at the meeting.

Dr. Maximilian Herzog, formerly of Chicago, now a pathologist of the Biological Laboratory, Manila, Philippine Islands, has discovered a hitherto undescribed chromogenic bacterium which he has called bacillus aureus foetidus. This bacillus caused a fatal human infection in the body of a Filipino forty years of age. The interesting study by Dr. Herzog has been issued in pamphlet form by the Interior Department and contains sixteen pages of letter-press and nine handsomely illustrated cuts.

Dr. Alice Hamilton and Miss Julia Lathrop of Hull House, of Chicago, have been active in prosecuting druggists of that city for the illegal sale of cocaine. The state law provides that the State Board of Pharmacy may proceed civilly as in act of debt against any one charged with selling cocaine and collect a fine of $50 to $200 for the first offense and from $200 to $1000 for the second offense. On the second offense the license of the convicted person may be revoked. Geo. Allen of 438 Dearborn st. was fined $50 and costs by Justice Doyle for selling poison in packages without labels.

The third and final report of the Sanitary Investigation of the Illinois, Mississippi and Missouri Rivers has recently been published by the State Journal for the State Board of Health. The most striking fact shown in this report is that the great flow of Lake Michigan water now passing through the canal into the Illinois river has so diluted the sewage that the water of the Illinois river is purer today than in 1899 prior to the opening of the drainage canal and it is believed that the water of the drainage canal itself is really purer than would be the water of the Illinois at low stage.

Deductions from Experiments.

In summing up the points deduced from the investigations recorded in the three reports of the board, Doctor Egan states:

1. That the water supply of the city of St. Louis is not injuriously affected by the Chicago Drainage canal and the flow of the Illinois river, the Illinois at its mouth being purer than the Missouri at its entrance to the Mississippi.

2. That the water of the Mississippi is not injured by the Illinois flow, as the water of the Illinois is practically as pure as the water of the Mississippi above the entrance of the Illinois.

3. The condition of the Des Plaines and Illinois river waters has been actually improved by the inflow of the drainage canal with its abundance of Lake Michigan water.

This would tend to show that neither the city of St. Louis nor other cities drawing water supplies from the Illinois river, or the Mississippi from Grafton down, are in any way menaced by the sanitary canal.

As to the effect of the sanitary canal upon the water supply of the city of Chicago, there can be no question, and when proper extensions of the canal are made, as already provided by law, so that the sewage of the Calumet and Evanston regions will be included in its flow, the city of Chicago will receive from Lake Michigan a water so pure as to meet every requirement for domestic use and as to practically exclude the possibility of water born diseases.

Peoria Begins a Crusade Against Tuberculosis.

A stiff fight is to be waged on tuberculosis in Peoria. The campaign is one of prevention and the exercise of radical measures as the cases demand.

The Associated Charities of Peoria has taken the initiative in the matter and Dr. Sumner M. Miller has been placed in charge of the work. Associated with him are Dr. Hayes health commissioner, Dr. Whitten and Miss Keyes the visiting nurse.

In line with the action of the state in organizing a tent colony at Ottawa, the Associated Charities will work. All of the methods in vogue elsewhere will be called into play and new plans for the prevention of the spread of malady and the complete stamping out of the disease will be used.

Action is Taken.

The executive committee of the Associated Charities met at 4 o'clock yesterday to consider the plans presented for waging a warfare against tuberculosis in Peoria and initial steps were taken to carry on the work outlined.

Consumption killed 7,000 people in Illinois during the year 1903. The death rate being five times as great as that of any of the other diseases whose spread is controlled so carefully. Dr. Miller in a comprehensive statement outlined the work to be done. He said that fully one-seventh of all persons die of tuberculosis, yet consumption is a preventable and a curable disease. It can be prevented in Peoria, he said, and the sick can be cured if taken in time before much lung tissue is destroyed.

The Plan.

The plan outlined is similar to that adopted by other municipalities, notably New York where since 1886 a gratifying reduction of forty per cent in mortality of tuberculosis has been effected.

On the average, each case of tuberculosis infects one other case. It is the prevention of this second case, and the cure of the first case that is attempted.

Before the disease can be adequately controlled, it must be accurately known where the hotbeds of disease lie.

The warfare must be waged in the individual case.

First, therefore, from the death records of the city for the last decade, each death from tuberculosis will be tabulated, and charted upon a map of the city, which when completed, will show graphically the location of every case which died of this disease and during the period. Any location shown by a grouping of the cases

to be badly infested with the disease will be vigorously attacked and the disease eradicated at these points.

Is on Increase.

Individual houses that have fostered more than one case will be subjected to rigid disinfection and espionage. From these records, too, the occurrence of many cases in a single family can be determined, and the annual mortality can be estimated. And we may know whether the disease is on the increase in the city.

Second, the co-operation of the medical profession will be urged, and, by the report of all cases observed it is hoped that a record and register of those suffering from the disease may be kept. Such information will be kept private. The object being to aid the physician in his work and to protect the friends and relatives of the patient from the disease, and to put the patient on the road to health. If it is so desired the patient will be visited in his home, and plain instruction as to the disposal of the sputum—the main avenue of the spread of the disease, will be given.

Printed placards and pamphlets stating the nature of the disease, the methods of cure, and of the protection of the friends, will be given to the patient. The cases will be then controlled and visited from time to time. At any change of residence of the tuberculosis patient, steps will be taken to properly disinfect the rooms before they are used by others, as it is a matter of common observance that a residence occupied by a consumptive, if not properly disinfected, will endanger the health and lives of those subsequently dwelling therein. The cause of the disease is lurking in the dust and dirt of corners and this spreads the disease in families occupying these dwellings afterwards.

This point cannot be sufficiently emphasized, as it is a very common means of spreading the disease.

Will Make It Obligatory.

It is the aim of the committee ultimately to take steps to make the report of cases of tuberculosis obligatory for the purpose of aiding in the work of disseminating knowledge of the methods of the spread and for the purpose of prevention of the spread of the disease and of protecting those associated, and the cure of those affected.

Further it is also intended to urge upon the city council the passage of an ordinance compelling landlords to properly disinfect premises that have been occupied by consumptives before they are again used. This is solely for the protection of those who may afterwards live in such houses.

By such simple means the spread of tuberculous can be checked, and the disease greatly limited.

A Sanitarium.

The next step naturally is the establishment of the sanitarium where the sick consumptives can be adequately cared for, where he will have the very best chance of fighting the disease and of regaining health by living a wholesome life.

The committee to whom this work is delegated consists of Dr. S. M. Miller, chairman, H. B. Hayes, health commissioner of Peoria, Miss Keyes and Dr. H. H. Whitten.—Peoria Herald-Transcript, July 27, 1904.

Marriages and Deaths.

MARRIAGES.

Dr. Clarence W. Hopkins and Miss Mary E. Kinsey of Chicago, July 27.

Dr. Wm. W. Quinlan and Mrs. Truman W. Miller, both of Chicago, at Haverhill, Mass., July 12.

Dr. John P. Benson and Miss Irene Devine, both of Joliet, July 14.

Dr. Chas. E. Siegel and Miss Myrtle Shoup, both of Abingdon, July 28.

Dr. Chas. E. Morgan of Humboldt and Miss Sarah Dole of Mattoon, July 7.

Dr. Arthur D. West and Miss Margaret Rosborough of Elgin, June 28.

Dr. Henry A. Davis of Cairo and Miss Bertie N. Moore of Converse, Missouri, July 6.

Dr. R. M. Little of E. St. Louis and Miss Mabel Allyn of Modesto, July 7.

Dr. Walter C. Bley of Beardstown and Miss Pearl Barkley of Virginia were married at Virginia, August 27.

DEATHS.

Dr. Clinton D. Henton, of Danville, died June 25. Age 73.

Dr. Patrick G. Jennings, Melrose Park, died July 3. Age 47.

Dr. John B. Wilson, of Harrisburg, Ill., died recently at the age 72.

Dr. Stephen D. Pollock died at his home in Galesburg, Ill., July 20, at the age of 64.

Dr. J. T. Koen, of Walshville, Ill., died July 14, age 62.

Dr. Wm. H. Githens, Hamilton, died June 29, age 77.

Dr. Wm. B. Rehling, of Alhambra, Ill., died July 28, aged 26.

Dr. Henry Venne, of Mattoon, Ill., died July 14, aged 70.

Dr. David B. Taylor, Millburn, Ill., died Aug. 1, aged 78.

Dr. Thomas McGaughey, Pennington Point, Ill., died Feb. 28.

Dr. C. C. McKinley died recently at Champaign, Ill., aged 76.

Dr. W. F. Hall, McLeansboro, died June 18, aged 53.

Dr. Harry F. Rue, Bloomington, died August 2, aged 22.

County and District Societies.

MERCER COUNTY MEDICAL SOCIETY.

Regular meetings are held at Aledo, quarterly. Membership 25.

Officers.

President ..... C. W. Carter, Aledo
Vice President ..... H. I. Allen, New Boston
Secretary and Treasurer..V. A. McClanahan, Viola
Censors: H. H. Sherwood, New Windsor; E. J. Hay, Millersburg; P. T. Bohan, Seaton.

The Mercer County Medical Society held their regular quarterly meeting in Aledo, July 12, 1904.

The papers read were on **Pain** by Dr. J. W. Ramsey and one entitled **Some Obstetrical Observations,** by Dr. M. G. Reynolds.

The papers were well prepared and the meeting was a profitable one.

The next meeting will be held the second Tuesday in October in New Boston.

CLINTON COUNTY MEDICAL SOCIETY.

Officers.

Regular meetings are held on the first Tuesday of February, May, August and November. Membership 18.

President ..... Ph. H. Leibrock
Vice President ..... B. J. Meirinke
Secretary ..... C. H. McMahan
Treasurer ..... T. E. Alsop

The Society held its regular quarterly meeting in Trenton, Tuesday, August 2, 1904, with the following members present: Drs. Alsop, Hill, Edwards, Gaffner, Carter and McMahan.

The meeting was held in the office of Dr. Carter, and as the president and vice president were both absent, Dr. Gaffner was elected to preside over the meeting.

Dr. J. G. Vogt, of Trenton, was elected a member of the society. An interesting case of **Valvular Heart Lesions** was presented by Dr. Carter which was quite instructive.

The question of contract practice, especially relating to miners and their families, was brought before the Society, and after a lengthy discussion it was decided to let the matter lay over until the next meeting.

Meeting adjourned at 4 p. m., to meet in Carlyle November 2, 1904.

CHAMPAIGN COUNTY MEDICAL SOCIETY.

Regular meetings are held in Champaign at the Hotel Beardsley the third Thursday of each month. Membership 60.

Officers.

President.....S. S. Salisbury, Champaign
Vice-President.....W. L. Gray, Champaign
Secretary and Treasurer....Jas. S. Mason, Rantoul
Censors.....C. H. Spears, H. E. Cushing, Champaign, and J. A. Hoffman, Pesotum.

The regular bi-monthly meeting of the Champaign County Medical Society was held in Champaign City, June 22, 1904. The session was called to order at 2 p. m., in the parlors of the Beardsley hotel, the President, Dr. S. S. Salisbury in the chair.

After the reading of the minutes and the transaction of some miscellaneous business Dr. James M. Bartholow of Urbana read an interesting paper on **Scarlet Fever.** The essayist emphasized the misfortune of mistaking mild, atypical cases of this disease for a simple tonsilitis, and gave it as his opinion that it was in this way that scarlatina was frequently spread. The paper called out an interesting discussion and among others who participated in this were Drs. Dodds, Wall, Howard, Cushing, Burress and Collins.

Dr. W. F. Burress of Urbana next read a paper on **Skin Diseases** in which he gave a concise, practical classification of these troubles, and also some sensible suggestions relative to treatment. The paper was discussed by Dr. Wall and others.

The meeting was well attended and after a verbal report of cases and the transaction of some additional business the Society adjourned.

ROCK ISLAND COUNTY MEDICAL SOCIETY

Regular meetings are held monthly at Rock Island on the second Tuesday. Membership 56.

Officers.

President.....L. D. Dunn, Moline
1st Vice-President.....G. A. Wiggins, Milan
2d Vice-President.....W. L. Ludewig, Rock Island
Secretary.....T. J. Lamping, Moline
Treasurer.....L. Ostrum, Rock Island
Official Reporter.....F. H. First, Rock Island

Regular meeting held at the Harper House, Rock Island, August 9. There were thirty-three members present. There being no papers to be read Dr. Gardner of Moline gave a talk on his observations at some of the medical centers of Europe last summer.

After a general discussion concerning the best interests of the profession it was decided to appropriate twenty-five dollars to be used by the legislative committee in securing evidence against several quacks who recently located in the county.

A letter from the Secretary of the State Society was read, asking the county society to appoint a committee on arrangements for the State Society meeting which is to be held in Rock Island next May.

The following is the committee appointed by the county society: Drs. C. Bernhardi, chairman, G. G. Craig, Sr., J. DeSilva, W. H. Ludewig, S. B. Hall, J. R. Hollowbush, F. H. First, Emily Wright, B. F. Hall, E. M. Sala.

WABASH COUNTY MEDICAL SOCIETY.

Regular meetings are held at Mt. Carmel, quarterly. Membership 18.

Officers.

President ..... W. B. Moon, Bellmont
Secretary ..... J. B. Maxell, Mt. Carmel

The Wabash County Medical Society met at Dr. Kingsbury's office, Tuesday, July 26, 1904. There were present thirteen members and visitors. Dr. J. T. McAnally, councilor for the Ninth District of Illinois, of Carbondale, was

present and discussed the subject of **Practice of Medicine,** in a very practical and satisfactory manner. A general discussion followed. Dr G. C. Kingsbury opened a discussion upon **Summer Diarrhoeas of Children.** This was followed by a general discussion which was a timely subject because of the increased number of that kind of cases caused by the few days of high temperature.

The Society had arranged for a carriage ride in honor of Dr. McAnally. After the meeting adjourned, the members entered carriages and they were shown about the city to the numerous factories and the splendid government lock and dam. The doctor's visit will be the means of strengthing the Society and arousing a renewed interest.

Every regular physician in the county in practice is now a member of the County Society.

DECATUR MEDICAL SOCIETY.

Regular meetings are held in the Decatur Club Rooms the fourth Tuesday of each month Membership 62.

Officers.

President ..... Lynn M. Barnes
Vice President ..... Clara Garber
Secretary-Treasurer ..... W. C. Bowers
Board of Censors: E. A. Morgan, F. M. Anderson, J. Stebbins King.
Programe Committee: W. C. Bowers, Chairman; E. J. Brown, W. C. Wood, A. Wilhelmy, L. M. Barnes.
Delegates to the State Society: Cass Chenoweth, W. C. Bowers, E. J. Brown.

The Decatur Medical Society held its regular monthly meeting in the Decatur club rooms, July 26, 1904, at 8 p. m., the Vice President, Dr. Clara Garber, presiding.

Dr. M. V. Lonergan read the paper of the evening on **The Treatment of Pneumonia.**

He dwelt especially on the use of quinine in the congestive stage of pneumonia to abort the disease. The paper was interesting and elicited much discussion, Dr. M. T. Heffernan leading.

Dr. W. J. Chenoweth's talk was full of reminiscences of the days when quinine was almost always given in pneumonia as it was usually associated with malaria, also at that time (fifty yers ago) bloodletting was practiced by some members of the profession with some apparently remarkable cures in sthenic types.

The Decatur Medical Society held a called meeting in the Decatur club rooms, Monday evening, August 15, 1904, which took the place of the regular August meeting which would have been held Tuesday evening, August 23, 1904.

This special meeting was a smoker given in honor of Dr. E. E. Montgomery of Philadelphia, who was visiting relatives in Decatur.

Dr. Montgomery gave us a delightful and instructive talk on **Carcinoma of the Uterus.** The three cardinal symptoms of pain, hemorrhage and offensive discharge are not always positive signs of carcinoma, but should lead to investigation of the cause whether occurring collectively or singly and at any age. Any of these symptoms occurring during the climacteric should be carefully considered and the woman not told that they are to be expected during the change of life and need occasion no alarm. All cancer affecting the portio vaginalis even if immense cauliflower excrecence demand hysterectomy.

Cancer affecting the cervix proper is peculiarly fatal.

Cancer of body of the uterus demands hysterectomy if the disease is probably limited to the uterus.

A case was related where a hysterectomy was performed by the abdominal route where the disease showed itself months afterwards at the site of the abdominal wound and did not recur in the pelvis, apparently proving the possibility of inoculating healthy tissues with cancer.

The speaker stated that there were no early positive symptoms of cancer of the uterus but anything arousing suspicion should be investigated and if in doubt a microscopical examination should be made of suspected tissue.

About thirty-five members were present as well as a few visitors.

Altogether this was one of the most delightful meetings of the year so far.

ADAMS COUNTY MEDICAL SOCIETY.

Regular meetings held in Quincy the second Monday of each month at 2 p. m. Membership 70.

Officers.

President ..... L. H. A. Nickerson, Quincy
First Vice Pres ..... John A. Koch, Quincy
Second Vice Pres ..... J. M. Grimes, Camp Point
Secretary ..... Geo. E. Rosenthal, Quincy
Treasurer ..... R. J. Christie, Jr., Quincy
Censors: C. D. Center, Jos. Robbins, S. B. Ashton, Quincy.
Delegate State Society..E. B. Montgomery, Quincy

The regular meeting was held August 8, at the Chamber of Commerce, President Nickerson, being in the chair.

In the August Journal Dr. Christie reported a case of pyo-pneumo thorax. By mistake it was made to appear as Pyo-haemo-thorax.

Drs. C. E. Ehle and A. W. Meyer of Quincy were elected to membership.

Dr. Rosenthal reported a case of **Actinomycosis of the Cervical Lymphatic Glands of the Right Side, Necessitating Ligatures of Right Common Cartoid Artery: Aspiration Pneumonia: Death.**

Patient was a male, occupation farm laborer, age 66. One year previous had had epithelioma of lower lip removed, at that time there was no enlargement of the neighboring glands and there has been no recurrence.

Patient robust and well nourished, has not lost weight since beginning of present trouble six months previous.

The present growth consists of one large submental tumor equal to a hen's egg in size, and another just anterior to the angle of the jaw on the right side of equal proportions, connecting and surrounding these two was a mass of thickly matted glands. Venous channels stood out prominently over the affected area.

The tumor near mandibular angle was broken down and discharged a sulphur yellow material which gave negative results when examined for actinomyces.

At the second dressing an alarming hemorrhage occurred from this tumor mass. Haemostats refused to hold in the disintegrated tissue, the patient was carried to a table, where the hemorrhage was stopped by packing the cavity with gauze moistened with adrenalin solution.

The hemorrhage appeared to be both arterial and venous and it was thought that the facial artery wall had been invaded by the granuloma. Patient was almost unconscious when hemorrhage was checked so it was decided that it was necessary to ligate the facial or external cartoid artery to prevent a more serious recurrence of hemorrhage.

On the following day patient was anaesthetized with chloroform, but breathing became so bad that ether had to be used. Chloroform was at length resumed and operation was begun. It was found that facial and external cartoid arteries were so obscured and distorted by the mass of glandular tissue as to be difficult of recognition. It was then decided to ligate the common cartoid since this was below the affected zone and would present a sounder wall for the ligature, accordingly the common cartoid was raised and ligated.

Patient had both cardiac and respiratory failure four times during the anesthetic requiring artificial respiration and cardiac massage each time. Patient was given saline infusion and put to bed, when seen that afternoon his condition seemed good. On the following morning a double aspiration pneumonia had developed and patient died at 7:00 p. m., thirty-six hours after operation.

The operative field was much obscured by venous hemorrhage at all times.

Adjournment.

JO DAVIESS COUNTY MEDICAL SOCIETY.

Officers.

President ..... T. J. Stafford, Stockton
Vice President ..... A. F. Bucknam, Warren
Secretary-Treasurer.....D. G. Smith, Elizabeth
Board of Censors: John C. Hancock; U. S. Lewis, East Dubuque; S. G. Kreider, Lena.

The society held its regular quarterly meeting in the Odd Fellows hall, Galena, July 28, 1904.

The officers were all present and upon roll call the following responded: Stafford, Blair, Nadig, Egan, Buckman, Grassau, Bench, Gunn, Weerich, Tyrrell, Smith, D. G., Godfrey, Bair, Hayden, Wright, Stealey, Lewis, U. S., Barber, Kreider, Keller, Gratiot, with the following visitors: Dr. Renwrick of Warren, Dr. Delimore of Chicago, Dr. J. R. Guthrie and Dr. Mitchell of Dubuque, Dr. C. C. Gratiot of Shullsburg, Dr. Buck of Plattville and Dr. Cleary of Galena.

Dr. L. Jacobs of East Dubuque and Dr. H. B. Gratiot of Dubuque were elected to membership. The application of Dr. J. R. Guthrie of Dubuque was read and received.

Dr. E. M. Bench read a paper on **Infection,** which was fully discussed.

Dr. J. R. Guthrie of Dubuque read a paper on **Eclampia,** discussion opened by Dr. Stealy who favored blood letting in plethoric cases. Dr. Guthrie closed by emphasizing the use of heroic doses of veratrum viride.

The Galena physicians had arranged for a dinner at the Gault Hotel and the physicians who were accompanied by their wives enjoyed the dinner to the utmost.

At four o'clock the Society again reconvened and Dr. Stealy presented a case of arteriosclerosis and read a paper on **Why so Many Errors in the Diagnosis of Grave's Disease.** He very clearly showed that many of these cases are not detected until late in the disease, and that they are far more numerous than supposed.

Next meeting will be held in East Dubuque in October.

WAYNE COUNTY MEDICAL SOCIETY.

Regular meetings held in Fairfield the second Wednesdays of January, April, July and October. Membership 14.

Officers.

President ..... W. M. Johnson, Johnsonville
Vice President ..... J. D. Harlan, Fairfield
Secretary ..... J. P. Walters, Fairfield
Treasurer ..... F. Bean, Fairfield
Censors: T. J. Hilliard, Jeffersonville; W. C. Sibley, Fairfield; B. E. Garrison, Wayne City.

The Society met at the court house in Fairfield in regular session Wednesday afternoon, July 13, with Dr. W. M. Johnson in the chair.

The following physicians of the county were present: W. M. Johnson, J. P. Walters, W. A. Hancock, C. O. Truscott, B. E. Garrison, T. J. Hilliard, F. Bean, W. C. Sibley, J. E. Dixon, Gregg Garrison, J. D. Harlan. Dr. J. T. McAnally, of Carbondale, District Councilor, was also present.

After the meeting was called to order, the program, as previously advertised, was carried out.

Dr. C. O. Truscott, of Cisne, read a paper entitled **Major Injuries of Minor Members,** which was followed by a discussion by Drs. Harlan, McAnally, Dixon, Johnson and Walters.

Dr. J. D. Harlan, of Fairfield, presented a paper on **Summer Diarrhoea in Children,** which was discussed by Drs. Johnson, Truscott, G. Garrison, McAnally, Walters and Dixon.

Dr. J. T. McAnally, of Carbondale, delivered an address on **The Practice of Medicine.** The address was a most excellent one and a vote of thanks was tendered Dr. McAnally.

Dr. B. E. Garrison, of Wayne City, read a paper on **Delayed Resolution in Pneumonia,** and the same was discussed by Drs. Truscott, G. Garrison, Dixon, Johnson and Sibley.

Dr. Gregg Garrison, of Wayne City, was proposed and accepted as a member of the Society.

Committees were appointed as follows:

To arrange uniform scale of fees—T. J. Hilliard, F. Bean, J. P. Walters.

To confer with Board of Supervisors Regarding Pauper Practice—W. C. Sibley, J. D. Harlan, B. E. Garrison.

At a night session, Dr. J. E. Dixon read an

interesting paper on **Tubercular Ostitis.** In connection with his paper Dr. Dixon presented two cases of diseased bone, commonly known as "white swelling," which were very interesting, and called forth a free discussion from all the members present.

Dr. W. C. Sibley read a paper on the subject **Auto-infection and Auto-intoxication** which also gave rise to spirited discussion on the part of the physicians present. As several of the members could not attend the evening session, a resolution prevailed asking Drs. Dixon and Sibley to repeat their papers at the next meeting of the Medical Society which will be held on the second Wednesday of October.

STEPHENSON COUNTY MEDICAL SOCIETY.

Regular meetings are held at Freeport monthly. Membership 30.

Officers.

President ..... Dr. W. J. Rideout, Freeport
Vice President ..... Dr. J. N. Daly, Orangeville
Secretary ..... Dr. K. F. Snyder, Freeport
Treasurer ..... Dr. M. M. Baumgarten, Freeport
Board of Censors: Dr. Hillebrand, Dr. B. Erp. Brockhausen, Dr. J. A. Poling.

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A regular meeting was held on July 14, 1904, with Dr. J. H. Stealy in the chair.

Minutes of previous meeting were read and approved.

Application of S. S. Howe, M. D., of Dakota, Ill., graduate of Rush Medical College, 1904, was read and referred to board of censors according to rules. Secretary and Treasurer's report was read showing 30 members in good standing for 1903, and $87.51 in treasury. Same was accepted in regular form.

The officers were elected for the coming year as above.

Regularly moved and carried that the committee appointed at last meeting to investigate **complaint against persons violating Illinois Practice Act in Stephenson County** be discharged and that a new committee of three be appointed who shall be empowered to act. Committee, Dr. B. A. Arnold, Dr. W. F. Bushnell, Dr. L. M. Currier.

The newly elected president, Dr. W. J. Rideout, was escorted to the chair when he briefly addressed the Society, thanking the members for the honor conferred on him, and soliciting their hearty cooperation for the coming year.

A vote of thanks was extended to the retiring officers for services rendered the Society during their term in office.

Program.

J. H. Firestone, **Two Factors in Pelvic Diseases of Women; Their Prevalence and Prevention.**

L. G. Voigt, **Fracture of Skull with Reference to Cases.**

K. F. Snyder, **Graves Disease.**

Papers were generally discussed by the members present.

Adjourned.

DOUGLAS COUNTY MEDICAL SOCIETY.

Regular meetings are held at Tuscola. Membership 24.

Officers.

President ..... W. A. Wiseman, Camargo
Vice President ..... E. S. Allen, Arcola
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The Douglas County Medical Society met in regular session in the K. of P. hall, Tuscola, on August 4, 1904, at 2 p. m. Ten members were present. The President, Dr. Wiseman, being absent, Dr. Voyles occupied the chair. The minutes of the last regular meeting read and approved. Three excellent papers were read. One by Dr. Harper of Villa Grove. Subject **Appendicitis,** in which he discredited the use of opium in these cases and favored early operation in all favorable cases.

Paper by H. I. McNeill of Newman. Subject **Some Sanitary and Hygienic Problems.**

First. The author spoke of the matter of venereal sanitation and of physicians not fully and forcefully impressing their patients with the danger of infecting others.

First, he advocated that physicians thoroughly instruct the patient as to the nature of his affection.

Second, insist on patient disinfecting his or her soiled linen and the use of the individual drinking cups and table utensils, towels, etc.

Third, patients should occupy separate beds.

Second. Spoke of sanitation in all contagious diseases including certain forms of itch and various skin affections.

Third. The disposing of all typhoid excreta.

Fourth. The drainage in low lying and level districts.

Fifth. Spoke of the problem of hygienic ignorance, such as the confining of fever patients in ill ventilated and darkened rooms and of not bathing them. As well as the various other forms of ignorance and mystery surrounding sick patients.

The Society was next favored by a most excellent paper by A. E. Boyce, D. D. S., on **The Evil Results Following Extraction.** Illustrated with models from practice.

Abstract.

The author called attention to the great destruction and loss of children's teeth due to neglect and ignorance on the part of parents as to the proper time and means of caring for the teeth and that important function which the temporary teeth have to fulfill during childhood. And because it is only a baby tooth is no reason why it should not receive proper care and attention, not that temporary teeth should never be extracted, but that they should be extracted or allowed to decay away prematurely is the thing which we should strive to prevent. The impression which prevails among the laity that the temporary teeth have no root and should be extracted when they ache because a new one will come in after awhile any way is an error, which should be corrected and it is the duty of the physician and dentist to disseminate

this knowledge. A neglected first dentition often causes a great disfigurement of the permanent set, and a premature removal is much oftener the cause of irregularity than a tardy removal.

Because it is only a temporary tooth is no reason why it should receive no other consideration. Of course it is easier to extract than to take the time and patience to give it proper treatment for its preservation and parents usually think only of such measures as will at once and forever put an end to the trouble. The family physician is often called on at this time and often perhaps against his better judgment yields to the parents desire for extraction and thereby does an everlasting injury to his patient.

The conscientious physician and dentist will not only protest against premature extraction but after a kind and intelligent explanation of the proper treatment with good reason therefor, will absolutely refuse to become a party to the malpractice.

The preservation of the temporary teeth is important, because:

They are needed for the proper mastication of the food, without which there is not the proper assimilation and poor assimilation causes poor nutrition. When allowed to decay they contaminate the breath and the vitiated saliva mixed with the food passes into the stomach. Decay involves the pulp, causing pain and suffering with more or less nervous disturbance and final death of the pulp when the products of suppuration and other objectionable elements to the contents of the stomach. On the death of the pulp the physiological process of resorption of the root ceases and these roots from which the crowns have decayed sometimes remain for years deflecting the permanent teeth from their course or crowding them from their position in the arch. The temporary teeth are needed to retain the fullness of the alveolar process and maxilary development. They are needed as support to themselves and the teeth of replacement.

The evil results following premature extraction are:

Possible irregularity caused by absorption of the alveolar process and consequent arrest of development causing a contracted condition of the maxilla, permitting the remaining teeth to move toward one another closing the space, resulting in disallignment, impaction or prevention of the eruption of the permanent tooth.

Of especial importance are the second or posterior temporary molars and the temporary cuspids as the premature loss of these teeth and especially the temporary cuspids is the more frequent cause of irregularity, than any with which the dentist has to deal.

Also the premature extraction of the temporary molars may destroy the germs of the permanent bicuspids, the pulps of which are formed at about the fifth or sixth year.

Hygienic science is recognized as an essential factor in the care of the body and dental hygiene is just as essential in the care of the mouth and teeth as without it the battle is endless and the result doubtful.

Any diseased condition of the system which disturbs nutrition, affecting or preventing the assimilation and appropriation of the lime salts which go to build up the osseous system will produce manifest defects in the teeth and these conditions should be recognized and treated and physicians and dentists should take more interest in the subject and study for the preservation of the temporary teeth by a hygienic regime, which tends toward the prevention of a low grade of tooth structure. In this the physician's opportunity exceeds that of the dentist by reason of their earlier opportunity to make such examinations, than the family dentist and they should realize more fully the importance of examining the teeth of children and where they recognize the need for treatment insist upon the parents taking the child to the dentist.

No physician, who has the welfare of his patients at heart can afford to neglect a consideration of their teeth and the obligation upon his part for the conscientious supervisory care of the teeth is as great as that for the care of any of the other organs of the body which usually come under the care of the specialist. Passing from the consideration of the temporary teeth to the permanent teeth and especially to a consideration of the first or sixth year molar, have found very few in my experience who realize the importance of it, the common belief being that it is a deciduous tooth, mainly owing to the fact that it is erupted before any of the temporary teeth are lost. This ignorance is not confined to the poor and uneducated but extends to others who should know better and who have the time and means and would have it attended to but just never think of having their children's teeth looked after until the child is crying with the tooth ache. The sixth year molar is most frequently the first member of the permanent set to need attention on account of there being almost always more or less decay present in the mouth during the loss of the temporary teeth. The usual though by no means all of the evil results of extraction upon the permanent set are:

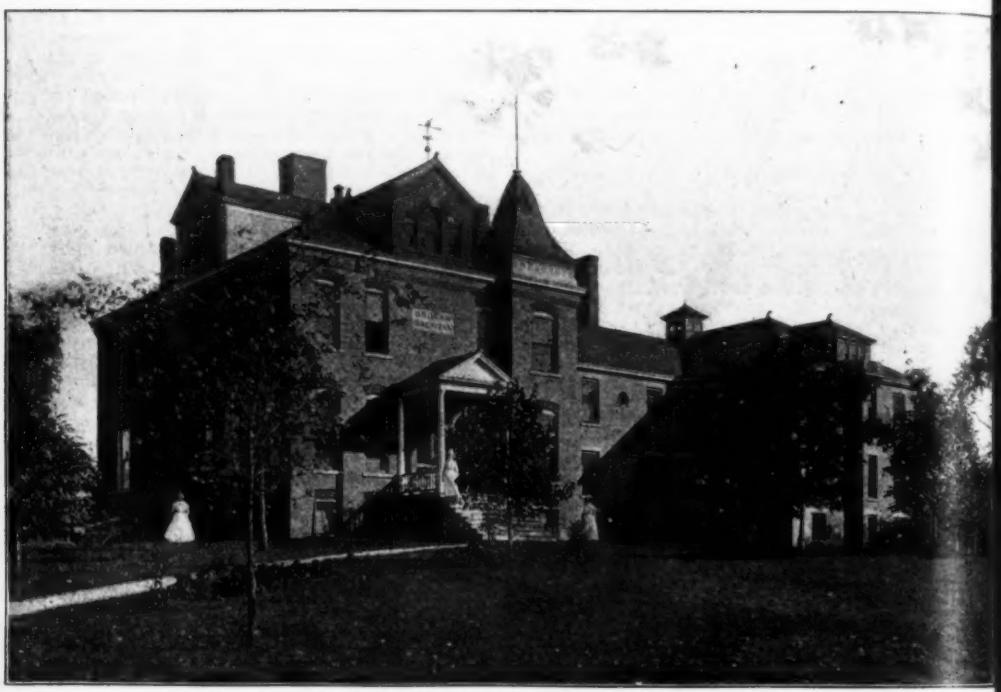
It diminishes the size of the dental arches. Except in rare cases there is a tipping forward of the next tooth back of the space caused by extraction. There is also invariably more or less rotation on its axis of this posterior tooth. By just so much as this tooth leans forward its triturating surface is separated from that of its opposite in the other jaw, thereby reducing its masticating surface for one-third to three-fourths, so that the extraction of the four first molars (which is often done) results in the loss not only of those four but of two-thirds of the triturating surface of the next teeth back of these. It shortens the bite. That is, it causes the nose and chin to approximate more than would be normal had there been no extraction. It often causes separation of the upper incisor and sometimes of the lower causing a very unsightly disfigurement.

It causes exposure of the gums wherever the occluding or cutting ends of the teeth are not in contact, thereby preventing thorough mastication.

First, because hard bits of food strike the gum where the space exists, giving pain and inconvenience.

Second because the occluding ends of the teeth do not mesh. It causes an undue wearing down of the cusps of the teeth tending later in life to fracture at the points of malocclusion. It gives greater liability to the deposit of tartar. It causes as surely undue crowding between the teeth that remain and touch at their grinding edges as it gives space in the spaces left by extraction and extracting to make room is a misnomer, because there is always less space afterward than there was before on account of the moving together of the remaining teeth to close the space there by diminishing the needed room for the tongue, so that speech frequently becomes less distinct that it otherwise would have been, and sometimes leaving so little room that the patient complains of being cramped in tongue movement.

And finally if the extraction has been early in life the development of the palatine arch is so much interfered with that it becomes impossible to develop first class vocalization.



BROKAW HOSPITAL—BLOOMINGTON—NORMAL, ILL.

Brokaw Hospital is situated on a rolling tract of eight acres of land midway between Bloomington and Normal.

It is an incorporated institution with its ownership and control vested in a board of trustees, appointed by the various protestant churches of McLean County.

The hospital is actively managed through a board of directors and various committees. The president of the board is Mr. Clinton P. Sopar and the superintendent is Miss Caroline S. Flatt.

The hospital was opened for patients in 1896. In 1902 a second and larger building was occupied, so that now accommodations are afforded for fifty patients, mostly in single rooms.

A training school is conducted in connection with the hospital. This school, incorporated under the title of the Brokaw Hospital School for Nurses, offers to women desirous of becoming professional nurses, a course of theoretical and practical instruction. The practical knowledge is gained by actual care of patients under the supervision of the Superintendent and her assistants. The theoretical course is of the best. The medical staff give weekly lectures and daily clinical instruction. A class of seven members was graduated in June of this year.

The hospital owes its financial prosperity, in great part, to the generosity of Mr. Abram Brokaw and, in honor of his wife and himself, bears their name.

Memorandum on Tuberculosis as Outlined by the Imperial German Board of Health.

Compiled at "Kaiserlich Deutsches Gesundheitsamt" at Berlin.

A. What is Tuberculosis.

Tuberculosis is the most destructive of all infectious diseases. It attacks various parts of the body, chiefly however the lungs; it spares no nation, no age, no vocation, no class of people. More than 100,000 persons die each ear in Germany from the effects of it, the number of patients afflicted by it being estimated as ten times as numerous. Every third person, who dies between the ages of 15 and 60 years, succumbs to tuberculosis.

Tuberculosis is caused by the tubercle-bacillus discovered by Robert Koch. This is a minute creature of the lowest scale, visible only when very highly magnified. It thrives best at blood temperature (about 98 degrees Fahrenheit) and multiplies in the interior of the body. It reaches the outer world chiefly in the sputum of sick persons and in the milk of diseased animals.

Every person is exposed to the danger of taking up the germs of tuberculosis into his own system, and many harbor them a long time without knowing it.* Every one must therefore be prepared for battle with this enemy.

The tubercle-bacillus is most efficiently destroyed by high temperature in the presence of moisture, as by boiling or steaming. It can not long resist the action of sunlight. Other means of disinfection, such as cresol water, a solution of carbolic acid, formaldehyd, require a special previous knowledge for safe and effective use.

B. How Does the Infection Take Place?

Hereditary tuberculosis is rare.

Tubercle-bacilli are taken up:

1. By inhaling with the air: germs either from the dried sputum of tuberculous persons in the dust, or whirled by winds and draughts while sweeping out, or carried on clothing or shoe-soles; or from the minute moist drops which invalids by coughing or talking diffuse in their immediate vicinity;

2. With the food: first through unboiled milk, also, in case of unsatisfactory inspection of meat through the flesh of tuberculous animals, which, admitted in trade, was not afterwards thoroughly cooked before being eaten;

3. Through injured or diseased places in the mucous membrane or in the skin.

Especially by means of unclean hands: e. g. in the case of children crawling on the floor, seizing soiled objects (clothing, handkerchiefs, and the like) and immediately afterwards putting the fingers into the mouth (sucking fingers, biting nails, licking fingers when turning over leaves,(picking the nose, and similar bad habits;

Again, by means of unclean utensils: e. g. putting into the mouth toys already used by others, drinking-glasses, eating-utensils, wind instruments;

Finally, by means of unnoticed small sores, scratches, eruptions (scabs).

The result of the absorption of tubercle-baccili is usually in the case of children at first a disease of the glands (e. g. of the neck and abdomen) and, in connection therewith, of the lungs, the bones and joints (scrofula of the bones, tubercular excrescences, voluntary limping), the cerebral membrane, etc. In the case of adults infection by inhalation predominates and leads to tuberculosis of the lungs, more unfrequently of the larynx (consumption). Through absorption of the tubercle-baccilli into the skin arises tuberculosis of the skin (e. g. lupus, corrosive herpes).

Most usually tuberculosis progresses slowly (chronic); exception: galloping consumption.

C. How Does One Protect Oneself Against Tuberculosis?

In the case of no common disease is it so much in the power of each person, of even the weakest and poorest, to help himself as in that of tuberculosis, if he only combines insight with self-control.

I. Measures Against Contracting Tuberculosis.

1. Let every person, whether well or sick, provide for the safe removal of the sputum, since one cannot detect whether sputum is tuberculosis or not. Do not spit on the floor of closed rooms (including street-cars and railway-coaches) or on frequented thoroughfares. Place in convenient corners spittoons filled with water which, to ensure safety, should be cleansed at short intervals (best by boiling out). Hold your hand before your mouth when coughing. Turn away from a coughing neighbor. Articles of clothing should always be kept clean, the trailing of garments should not be tolerated. The clothes, beds, linen of tuberculous persons may be used by others only after thorough disinfection. Dry sweeping should give place to moist, if need be scour with hot soda or a hot solution of soft soap. The raising of dust in the home, the work-place, and on the street should be avoided whenever possible. Shun places of refreshment where spitting on the floor is allowed,

*One-fourth of the corpses of persons who have died from other diseases show internal traces of tuberculosis that had been overcome.

2. Let the strictest cleanliness prevail in the preparation and preserving (guard against flies) as well as the eating of food, especially of that which is eaten raw. Milk should be boiled and meat cooked thoroughly before being eaten; the boiled milk should be covered and kept as cool as possible.

3. The hands including the nails, the teeth and mouth should be cleansed frequently and thoroughly. Putting the fingers into the mouth or nose, and also scratching the face should be discontinued. Every sore should be protected against impurities by suitable bandages.

4. With regard to the tuberculosis of animals it will suffice to say that in cattle it usually affects the lungs, in pigs usually the glands of the neck or the intestines; in the former, therefore, through inhalation, in the latter through the food, chiefly through the unboiled slops and refuse milk of dairies. Proper means of extirpation are: gradual sorting out of tuberculous cattle, chiefly those that betray visible signs of the disease (tubercular knots on the udder, coughing with emaciation and rough hair, and the like); removal of all animals feverish from the injection of tuberculin from special dairies for children's milk and establishments for breeding; separation of calves from tuberculous mothers; frequent exercise of the calves and young cattle, if possible of the older animals also, in the open air should be encouraged, the use of only boiled milk and dairy residua for the feeding of pigs**; exclusion of tuberculous persons, particularly of those with sputum, from attending the cattle; keeping the stalls clean.

II. Measures for Strengthening the Body.

It is impossible to extirpate all tuberclebacilli, therefore it is indispensable so to strengthen and harden the body that the absorbed germs can not take hold upon it. The principal means*** are:

Plain and wholesome food, which by judicious selection need not be expensive. Dainties and intoxicating drinks should be avoided:

A dwelling accessible to the entrance of air and light; rather in the suburbs than in the heart of the city; the best room selected as a sleeping room.

Plain, durable clothing out of material not too thickly woven, neither too warm nor too cool; in the case of a person in repose or of a sedentary occupation warmer than in that of someone frequently in motion; discarding the follies of fashion that hamper the free movement of the body, e. g. the corset and belts.

Only after defraying the costs of these unavoidable necessaries may other expenses be considered.

Let order and cleanliness have the first place in the whole conduct of life. Wash the whole body daily with moderately cold water or rub it vigorously with a rough, damp cloth, bathe in pure river or sea water, or take a shower bath (sparing the head) keep hair and beard, teeth and mouth, also the nails clean. Breathe through the nose keeping the mouth shut; the former is the natural filter for impure and injurious substances. If breathing through the nose is difficult, be examined by a physician; the impediment is often easy to remove.

Devote your whole strength to your work; it gives strength in return; seek, however, to perform it in accordance with the rules of health so far as these can be reconciled to it. Take advantage of prescribed measures for protection. Avoid a bent position in intellectual work. If you are an employer, consider how you may remove noxious substances or prevent such from arising (dust, smoke, etc.) The time for work and rest should be in proper proportion.

Devote the hours free from work to the strengthening of those parts of the body that had little opportunity to be exercised during work. Take exercise outside of your dwelling. Draw in long, deep draughts of fresh air while holding the hands pressed tightly against the sides. Accustom yourself also to being in the open air in unfavorable weather. Change wet clothing and shoes. Gymnastic exercises—especially when out of doors—suited to the conditions of the body, together with tramps on foot, games, moderate cycling, rowing, swimming and the like are the best allies in the fight with tuberculosis.

Go to bed at a reasonable hour. Avoid excesses of every sort. They destroy in a few minutes what has been gained in years. As little as a glass of moderately cool beer, a cup of moderately strong coffee or tea, a cigar—enjoyed at the proper time—injure the normal adult body, so much every intemperance injures it.

Finally, shun intercourse with persons who are suffering from infectious diseases; if duty or vocation demands such intercourse, then bear constantly in mind the prescribed measures of precaution. Before you move into a house in which a tuberculous person has recently lived, have it disinfected.

D. Advice to Persons in Great Danger.

Every one should study the foregoing rules of health, but especially all those persons who, from any reason whatever, have cause to fear tuberculosis more than others: weakly persons, such as have a long and slender figure with a flat chest, particularly if they be descended from tuberculous parents; again, such as have reason for the assumption that they have already taken up the germs of tuberculosis through intercourse with consumptive persons (relatives, guardians, fellow-workmen, or playmates) or in consequence of their own sickness in childhood from scrofula and the like; also those whom their vocation endangers (who work in-doors or in the midst of dust, etc.); finally, those recovering from a severe sickness, and generally such as have suffered or are still suffering from disease of the lungs or chronic affection of the throat, whooping-cough, mea-

**Many large dairies now heat all the milk before manufacture so that all danger is removed.

***Further particulars in the "Gesundheitsbuchlein," compiled in the Kais. Gesundheitsamt. 8. Abdruck., Berlin, Jul. Springer 1899. Price 1 Mk.

-les, influenza, diabetes, chlorosis, or are inclin-d to severe losses of blood (nose-bleeding and he like).

Let him, who possesses a body little capable f offering resistance, have regard to this fact hen he chooses an occupation: an occupation hat leads into fresh air and steels the body hrough exercise, is better than a business that onfines within doors. Persons with sensitive espiratory organs have to avoid not only dust and consequently dusty trades) but also smoke tobacco smoke included) and cold, rough winds r else take corresponding measures of precau-ion; talking in the cold air or while walking hould be discontinued and one should guard gainst catching cold and excessive bodily ex-rtion.

Not less important is the sensible observance f general measures of precaution in every lace where people assemble in large numbers hrough their occupation or from other causes in schools, boarding schools—corresponding onduct of tuberculous teachers—factories, hotels, poorhouses, orphanages). Neglect of tuberculosis by individuals endangers the gen-ral public.

E. Advice to Diseased Persons.

If symptoms appear that arouse the suspi-cion of a not merely transient disease of the espiratory passages: repeated coughing (dry or with sputum), frequent pains in the throat, breast, or back, lasting depression or tendency towards exhaustion, recurring fever, especially in the evening, with night sweats (though the covering be light), traces of blood in the sputum or even a discharge of blood from the throat, then a thorough examination by the physician (also of the sputum for tubercle-bacilli) should be made as soon as possible. If the suspicion is not confirmed, yet for all that the advice given under D. should be carefully followed. If the suspicion is confirmed, then the regulations prescribed by the physician are first of all to be observed. No cure is of avail if the patient does not himself contribute thereto by his gen-eral hygienic conduct and rigid observance of the prescribed measures of precaution. The pa-tient should realize the double duty of taking thought for his own cure; in order to become once more a useful, earning member of human society, and also of preserving his family, ser-vants and neighbors from infection by heeding the precautionary regulations. Incipient tuber-culosis is often curable; advanced, seldom. Suc-cess depends chiefly on timely anticipation.

Especial attention should be paid to the sputum: it should neither be cast upon the floor nor swallowed, but rather be vented into a separate, suitable vessel, which should be reg-ularly disinfected; better still are the saliva bottles which the patient takes with him. Should it be necessary at times to vent the sputum into the handkerchief, the latter should be boiled before becoming dry.

The disease can also be communicated by kissing. An evidently consumptive person should be urgently dissuaded from marrying; let him wait until he is cured. Tuberculous women should not suckle or nurse children.

In case fever and tendency towards hemor-rhage, rest and quiet are imperatively demand-ed; liberal enjoyment of quiet air, warmed by the sun, and free from vapor, dust, and smoke, is very beneficial, if the patient lies upon a sofa in a sheltered spot in the open air and has the lower part of the body sufficiently covered. The cure is most surely effected in a sanatorium de-voted especially to the restoration of consump-tives and directed by an experienced physician. After not too short a sojourn (not under three months), the obedient and attentive patient often regains not only his health, but appropri-ates to himself also the rules of living necessary to avoid relapses.

New Incorporations.

The secretary of state at Springfield licensed the following corporations:

David Chemical company, Chicago; capital, $10,000; manufacturing proprietary medicines; incorporators, Thomas McErnerny, John F. Ma-hon and Michael Koch.

Lotio Rubra company, Chicago; capital, $1,000; manufacturing drugs and medicines; in-corporators, James A. Hall, Leo Michael and Charles L. Berndt.

The Illinois Medical Journal.

EDITORIAL OFFICE, 522 CAPITOL AVENUE, SPRINGFIELD.

Copy for advertisements must reach the editor's office by the 20th of the month in order to secure insertion.

PUBLISHER'S NOTES.

The Journal is not responsible for any medical or therapeutical views expressed in this department.

CHOREA AND ANEMIA.

By ROSHIER W. MILLER, M. D., Ph. G., Barton Heights, Va.

Lecturer on Nervous and Mental Diseases, and Professor of Theory and Prectice of Pharmacy, University College of Medicine, Richmond, Va.

In the etiology of chorea, nothing is noted relative to anemia. It is simply accounted as an accompanying symptom of the condition. Medical literature emphasizes the relation between rheumatism and chorea, with anemia as an important symptom. After observation of several cases, I am strongly of opinion, however, that anemia as a causative factor is worthy of investigation.

Anemia of toxic origin presents pathological conditions which favor the production of choreaic affections. It is true that simple anemia is, as a rule, of secondary origin, and, viewed in this light, it may be argued that if chorea arises it is the result of the primary and not of the secondary conditions—thus agreeing with the admitted etiology. This argument, however, will not satisfactorily explain those cases of chorea which arise remotely from the primary condition, but recently from the secondary effects.

I submit three cases in which symptoms, treatment, and recovery seem to intimate at least a possible relation between anemia and chorea.

Case I. A female child of eight years gave a history of typhoid fever eight months prior to my visit. According to the mother's statement, the child had made a quick and good recovery, gaining rapidly in weight and exhibiting the energy of her former life. Six months later she became irritable and pale, with pain in her arms and legs, which condition was soon followed by gastric disorders and irregular spasms of the muscles of the face. Simple anemia was in evidence from objective and subjective symptoms alone, but was unquestioned in the light of the results obtained from blood examination—the red blood element being present to the extent of barely 3,000,000 red corpuscles per c.m.

This case was treated with two teaspoonfuls of pepto-mangan (Gude) and two drops of Fowler's solution, three times a day. After gastric symptoms had abated somewhat, two raw eggs per day were added to the diet. The patient was discharged in five weeks, completely recovered.

Case II. A female child ten years of age; gave history of malaria (a welldefined case of intermittent fever) one year previously. The pallid condition of the child induced the mother to solicit my aid. Upon examination, I found slight choreaic movements which had escaped the mother's eye, though she did admit that the child "could not sit still very long at a time," and "was constantly working her fingers." The blood examination revealed no plasmodium. The red cells were reduced to 2,800,000 per c.m. with a proportionate decrease of hemoglobin.

Pepto-mangan (Gude) alone was employed in doses of two drams in a glass of milk three times a day. The blood examination four weeks later showed red cells present to the amount of 3,900,000 per c.m., at which time I dismissed the case completely recovered.

Case III. A female child of thirteen years. Two months before my visit, the mother informed me, the child became peevish and pale, and was reproved at school for her inability to write neatly. She was taken from school, but she grew rapidly worse. Morning nausea, vomiting, headache and anorexia were her daily companions. I found her with pronounced histrionic spasm with involvement of the upper and lower extremitise. Hemic murmurs were plainly apparent, but no endocardial irritation could be determined. The blood count showed reduction in red cells to 2,100,000 per c.m. The hemoglobin was reduced to a degree greater than the red cells. A curious featurs of the case was the morning nausea. Immediately upon awakening, she experienced nausea, which was followed by vomiting. I discovered, however, that this condition was superinduced by odors from the kitchen, and directed that a small sponge, moistened with creosote water, be placed over the nose and mouth before the preparation for breakfast began. The annoying symptom was promptly checked by this simple method. The anemia in this case may have been produced by malnutrition, but even this view is mere speculation.

The irritability of the stomach in this case was so pronounced that I did not deem it wise to give nourishment—not to speak of medicine—by the stomach. During the first four days rectal alimentation was employed. A nutritive enema, consisting of four ounces of peptonized milk and two drams of pepto-mangan (Gude) was given every six hours. Small amounts of peptonoids with creosote on ice were given by the stomach. Egg albumin was taken in all the water she drank. After four days, the stomach was tested with small amounts of milk and pepto-mangan (Gude). Beginning with four ounces of milk and one dram of pepto-mangan (Gude) every four hours, the amounts of each were rapidly increased, until after three days the patient was taking eight ounces of milk

every two hours and four drams of pepto-mangan (Gude) three times a day. This diet, plus three raw eggs a day, together with the above treatment, was all that was employed for six weeks. The blood examination at this time showed a highly gratifying condition—the red cells being present to the extent of 4,100,000 per c.m. The bloom of youth once more tinted the cheek, and the shrine of St. Vitas lost a visitor.

NEUROTIC CONDITIONS IN WOMEN.

Prof. Chas. J. Vaughan, Chair of Gynaecology, Atlanta College of Physicians and Surgeons, writes: "Neuralgia constitutes the great cause of danger from the employment of hypnotics and narcotics, which only afford relief by numbing, but effect no cure. On the other hand, the formation of a drug habit rather aggravates the condition from which relief was originally sought. Neurasthenia, neuralgia and other manifestations, either of an active or passive character, are common and are always peculiarly rebellious to treatment. Cerebro-nervous affections peculiar to women associated with pathological disturbances of the reproductive organs are legion, and most trying to physician and patient. I have found nothing so well suited to these cases as Antikamnia Tablets, administered in doses of from one to three tablets and repeated every one, two or three hours according to the attendant's judgment. These tablets afford complete relief without fostering a drug habit and their exhibition is attended with no unpleasant after-effects. For the relief of painful menstruation there is no combination of remedies so generally successful as Antikamnia and Codeine Tablets. Their sedative, analgesic and anodyne properties especially commend them in the neuralgic and congestive forms of this distressing affection."

A SCOTCH DOCTOR'S OPINION.

The Quarterly Journal of Inebriety, so well and favorably known through the instrumentality of its brilliant and philanthropic editor, T. D. Crothers, A. M., M. D., quotes the following statement in reference to pain relieving remedies, from one of Great Britain's noted medical men, Dr. John Stewart Norvell, Resident Surgeon, Royal Infirmary, Edinburgh: "Antikamnia Tablets are a remedy for almost every kind of pain, particularly for headaches, neuralgias and neuroses due to irregularities of menstruation. They act with wonderful promptness; the dosage is small, two tablets. The undesirable after-effects so commonly attending the use of other coal-tar analgesics are entirely absent and they can therefore be safely put into the hands of patients, for use without the personal supervision of the physician."

Are you always going to remain in "that rut," Doctor? If you are looking for light, don't fail to send at once for Abbott's Alkaloidal Digest, a brief but thorough introduction to the practice of Alkalometry. A complimentary copy will be sent you, if you mention this journal. See "ad" of The Abbott Alkaloidal Co., Ravenswood Station, Chicago, Ill.

The Self Cure of Consumption Without Medicine With a Chapter on the Prevention of Consumption and Other Diseases, by Chas. H. Stanley Davis, M. D., Ph. D., Meriden, Conn. E. B. Treat & Co., New York, 1904. 75 cents.

This work of 176 pages on a topic of great public interest is treated in a popular way by Dr. Davis and on the whole can be recommended to the laity without reservation as it contains matter of great interest to the consumptive himself, his relatives and friends. The chapters consider the subject under the following head:

Consumption and its Fatality; What Causes Consumption; Heredity; Symptoms and Diagnosis of Consumption; The Treatment of Consumption; How to Breathe Properly; The Proper Diet for Consumption; Exercise for Consumptives; Change of Climate for Consumptives; The Sanatorium Treatment of Consumptives; Hygienic and Prophylactic; The Cough of Consumptives; The Hemorrhage of Consumption: Appendix 1. The Prevention of Consumption and Other Diseases; Appendix 2. Nutritive Value of Animal and Vegetable Food.

Some of the Statements made by Dr. Davis seem to us uncalled for and tend to bring discredit on the profession by the laity. These are "There are doubtless many practitioners today who have less knowledge of Consumption than was taught by Hippocrates." "Not one practitioner in a thousand has a suitable microscope or understands the use of 'them.' "

With the exception of these few criticisms the work is very well adapted for the purpose for which it is intended.

Exodin, a New Cathartic.

By Dr. Alfons Stauder, Specialist for Diseases of the Stomach and Intestines, Nuremberg, Germany. Read at the Nuremberg Medical Society, April 21, 1904; abstracted from the Therapie der Gegenwart, June, 1904.

The author desires to call attention to a cathartic which has very important advantages over the many old and new purgative remedies hitherto known. It is Exodin, diacetyl-rufigallic-acid-tetramethyl-ether, a greenish-yellow substance melting at 356 to 374° F. As is shown by Prof. Ebstein's report on this remedy, preliminary experimentation proved that rabbits bear 7½ grain doses very well and that this amount in human beings exerts a mild purgative action.

As suggested by Ebstein, Stauder gave to adults 2 or 3 tablets @ 7½ grains and to children 1 tablet. As it is tasteless and odorless, patients take the remedy without difficulty. The drug never causes any unpleasant symptoms whatever, no nausea, eructation or gastric oppression; even patients suffering from ulcer of the stomach can take it at all times without the least ill effect.

Its tastelessness gives Exodin an important advantage over castor oil and cascara sagrada. Its action is slow; and here his experience differs from that of Ebstein, for he found that it takes on an average 18 to 24 hours to manifest its effecy. Action in 8 to 12 hours only

occurred in mild cases of chronic constipation or when repeated doses had been given. This slowness of action proves that the drug, in contradistinction to the rapidly-acting purgatives, has no injurious or irritant effect on the intestinal mucosa. Exodin does not occasion a sudden and temporary downward peristalsis of the intestinal coils; it has a slower and more protracted stimulant action. This explains the facts that gastric pains and colic are absent; that the evacuations with rare exceptions are soft and formed, and diarrhoea is hardly ever seen; and that its action, which lasts several days and only gradually subsides, is not followed by constipation.

The author here appends a number of illustrative cases, which clearly evidence the splendid action of the remedy.

The most suited cases for its exhibition are acute and chronic obstipation in otherwise healthy persons, the so-called atonic forms, and also the cases in which regular defecation must be stimulated in consequence of haemorrhoids, intestinal stenosis, twists in the colon, etc. Ebstein warmly recommends its use in pregnancy, even in the early months where all other purgatives may be useless. It does not lose its efficacy when used repeatedly at intervals. Spastic obstipation, intestinal paralysis and coprostasis with large fecal accumulations are of course little suited for the remedy. Here warm oil enemata are preferable; and after the scybalae are softened Exodin can be warmly recommended to facilitate their evacuation in the place of the customary castor oil or calomel.

By examining the faeces before and after employing Exodin, Stauder satisfied himself that increased production of mucus or other symptoms of irritation of the intestinal mucosa never occur.

For these reasons he agrees fully with Ebstein's conclusions as to the value and efficacy of Exodin. The certainty and constancy of its action and the entire absence of unpleasant by-effects assure for it a very prominent position among the purgatives. Of course it goes without saying that a careful physical examination of the abdomen to determine the nature and cause of the faecal retention is a necessary preliminary to the institution of treatment in every case.

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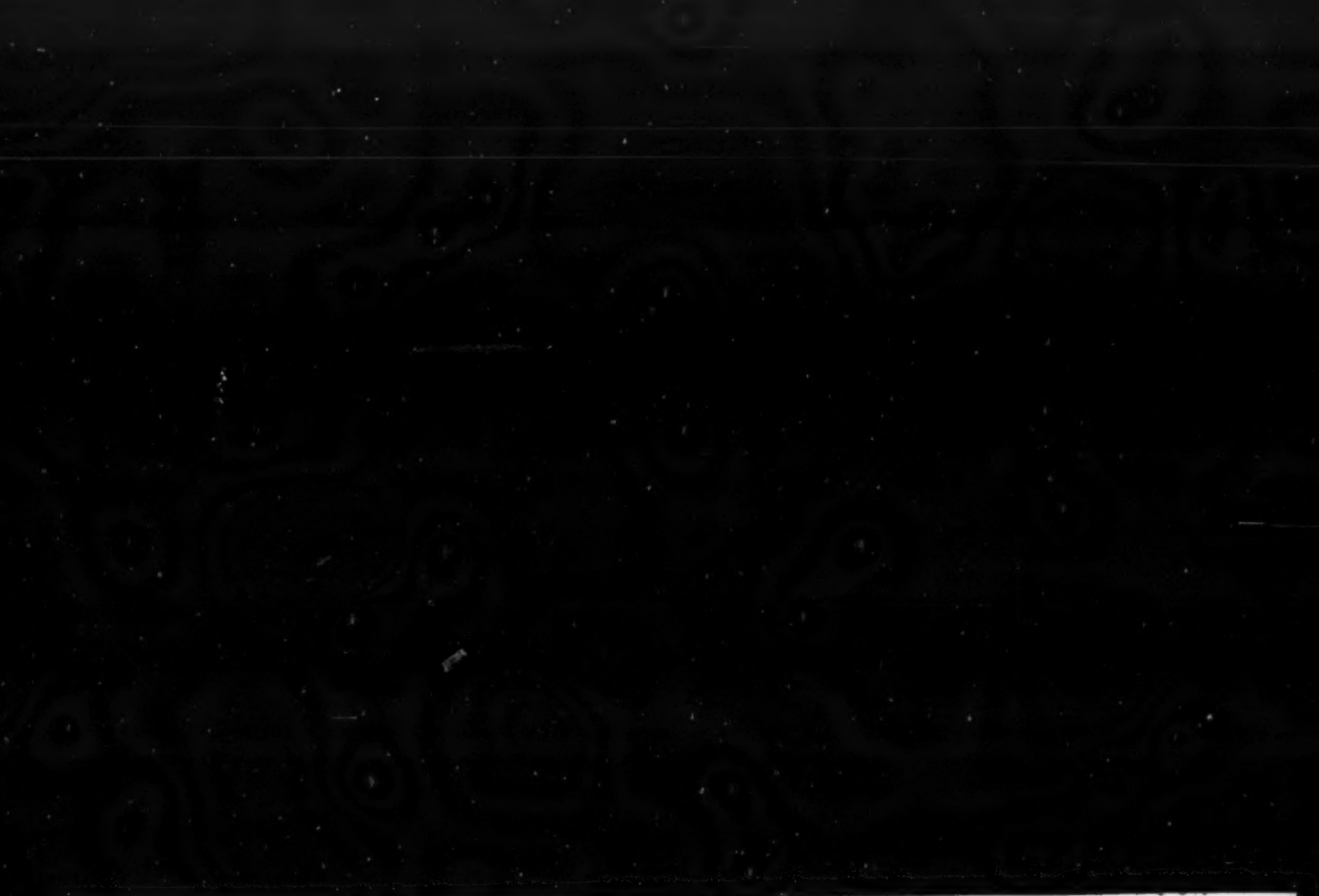
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